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# MEDICAL NEWS

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# THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

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## ORIGINAL ARTICLES.

### THE SIGNIFICANCE OF VARIATIONS IN THE INTERNAL SECRETIONS.*

BY O. T. OSBORNE, M.A., M.D.,
OF NEW HAVEN, CONN.;
PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS AT YALE.

THE subject of internal secretions and organic extracts has been so thoroughly discussed during the last year or two that I fear I can offer nothing new, but will put into words a few of my as yet chaotic thoughts hoping that some one here may mold them into some tangible form.

Bacteriologists are convincing us that more and more diseases are bacterial in origin, and I find that my clippings of articles and abstracts are going more and more into the files reserved for diseases or disorders of nutrition. These two great divisions of disease, bacterial and nutritional, are ever growing larger.

Pathologists are teaching us to class many so-called diseases as simply disturbed conditions, and to me the problem now is are not the glands furnishing internal secretions the cause of many of these mal-conditions?

We then turn to the physiologist to teach us the exact functions of these glands, and to the experimental pharmacologist to tell us what action to expect from the administration of these glandular extracts. However, our knowledge from both of these sources is as yet insufficient to account for many mal-conditions or to account for many successful therapeutic uses of these glands. Hence we are still in the realm of surmise as to the mal-physiology of the ductless glands in disturbed conditions and are perhaps often justified in using these organic extracts empirically. It is my purpose to briefly state what we really know of the most important secretions and what we are perhaps justified in surmising.

The conditions that have been proved to be caused by disturbances of an internal secretion are acromegaly, cretinism, myxedema, Addison's disease, and about half of the cases of diabetes. The conditions that I would like to see proved as due to some disturbed internal secretion are, hysteria, neurasthenia, possibly melancholia in its first stages, hemophilia, rickets, atheroma, sclerosis, gout, leucemia, chlorosis, shock, what we call a neurotic condition, and all cases of diabetes.

During this discussion, to-night, I shall leave out of consideration the various digestive juices and consider only those of the most important ductless glands.

We now pretty well understand the function of the thyroid, we know considerable of the suprarenal glands and the pituitary body, we know a little of the thymus, testicle, ovaries, mammary, and parotid glands, and considerable of the pancreas and spleen.

We may take up the action of the thyroid and suprarenals together, as in many ways they are diametrically opposed. The thyroid is perhaps the main organ of the body to furnish vasodilating material, while the suprarenal glands are without doubt the main organs of the body to furnish vasocontracting stuff. Hypersecretion of the thyroid or the feeding of thyroid substance will always dilate the peripheral blood vessels and reduce arterial tension. On the other hand, the blood-pressure raising power of suprarenal extract is without equal in pharmacology.

Physiologists have never yet proved a center in the brain for the regulation of heat, and many believe that the vasomotor center in the medulla is sufficient to explain this normal regulation of heat production and heat loss. What part these two glands play in this alternating opening and shutting of the blood vessels of course we do not know, but the babe has but an imperfectly developed thyroid, and its adrenals have been observed to contain no vasocontracting stuff, and we know that the temperature in the very young varies with the temperature of its surroundings, it having no heat governor or regulator.

The thyroid gland seems to be the one that has the most to do with the health of the skin, keeping it soft and pliable, and causing the normal amount of insensible perspiration. If this gland becomes atrophied or enlarged by connective-tissue elements displacing its normal parenchyma, the skin becomes harsh and dry, and if the condition is sufficiently aggravated, mucin appears in the tissues and the condition of mucous edema or myxedema is present.

Normally the thyroid gland begins to atrophy from forty-five to fifty years of age. The advent of old age allows, sooner or later, the skin to become dry, harsh, rough, and perhaps shrivel or wrinkle. In the condition of the skin just mentioned in old age and where there have been scaly eczemas due to dryness of the skin I have found thyroid to be one of the best treatments.

Diminished secretions of the thyroid allow the blood tension to become higher, hence the old adage that we are always and only as old as our arteries seems to be proved very true. Undersecretion of the thyroid gland tends to allow, I do not say cause, an endarteritis which later may lead to true atheroma. Hence the normal stiffening of the arteries that occurs as age comes on is simply physiological, due to the undersecretion of the thyroid, and if not actually to the oversecretion of the suprarenals, at least to the over relative secretion of the vasocontracting stuff. From these two reasons the arteries harden and the blood tension becomes high. That some of these conditions may occur in life is only because any of these glandular secretions may undersecrete or oversecrete at any time, due to various causes, and I believe that the so-called alterative drugs of which we have a large class have such so-called alterative action because they act upon one or more of the ductless glands modifying their secretion.

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* Read at the meeting of the Medical Association of the Greater City of New York, held at the New York Academy of Medicine, December 8, 1902.

Perhaps the reason that syphilitics have so much tendency to sclerosis and endarteritis is that mercury long given may interfere with the action of the thyroid gland. I think that probably underaction of the thyroid also allows connective-tissue growth in many of the organs of the body. In other words, it allows sclerosis and I believe that the feeding of thyroid in small doses is one of our best treatments to prevent the advance or at least to slow up this connective tissue formation. Also in cases of arteriosclerosis where nitroglycerin in small doses is of value to reduce the disturbances from high tension, such as dizziness, sleeplessness, headache, and possibly asthma, I have found thyroid of marked benefit. The iodides that have been so much used to meet all of these conditions just mentioned have been proved to be stimulant to the thyroid secretion.

To take up the opposite condition from the above, namely that of shock, we have, whether due to pain, severe acute or prolonged subacute, to severe injury or to operations even without loss of blood, from each cause the same pathology, viz., very low blood pressure and dilated or even paralyzed vessels. In the meantime, of course, the body is losing the heat, which is so necessary to life from the dilated peripheral vessels. Whether severe pain has caused an enormous secretion of the thyroid, or what is more probable, temporarily paralyzed the adrenals, or both, we do not know. When such shock follows laparotomy whether from splanchnic plexus injury or from the necessary manipulations disturbing the adrenal glands, certain it is that the most prominent indication is for something that will contract the blood vessels, and many times no drug in all our armamentarium is capable of carrying on the fight to a successful termination. I believe that to meet this condition we have in suprarenal, or adrenalin chloride, or suprarenalin solutions the very agents we desire. Suprarenalin is Armour's selling name for Abel's epinephrin.

The action of this substance in raising the blood pressure is immediate, but unfortunately does not last but a part of a minute. In treating shock it will probably be found best to inject a solution drop by drop into a vein timing the rapidity by the behavior of the pulse. The solution should be one part to a thousand of suprarenalin, where each drop represents .00005 of a gram. Adrenalin chloride solution is active and is acid. Any of these preparations of suprarenal can be given on the tongue for absorption there, but unfortunately it has been proved that when taken into the stomach the blood-pressure raising power of suprarenal is absolutely lost.

Suprarenal is also a strong cardiac stimulant as well as a vasomotor contractor. Reichert, of Philadelphia, has recently shown that in profound morphine narcosis the adrenal secretion is stopped. This explains some of the symptoms of the last stage of opium poisoning and shows the danger from loss of heat in these cases and suggests suprarenal treatment.

Now, turning to the nervous element in thyroid secretion we find that it is a marked cerebral stimulant causing wakefulness, acuteness, rapidity of thought, and general brain activity, all of which occur so frequently and so generally in our neurotic patients. If this secretion is greatly exaggerated we have headache, brain irritability, and can even feed it to the point of causing convulsions. What is taking place in the brain in melancholia we do not know, but I have occasionally awakened the mental faculties in morbid conditions by thyroid.

In the vasomotor ataxia (Cohen's term) of neurasthenia it would seem as if the suprarenal glands might not be doing their work, which would give the low blood pressure, the lack of digestive power, the drowsiness due to anemia of the brain when the patient is up and the sleeplessness when the patient is lying down.

Now, what is the intangible cause of hysteria? We turn again to the thyroid gland, as we know this to normally, in women, hypersecrete with each menstrual epoch. Also, 80 per cent. of all cases of exophthalmic goiter, or, as I prefer to call it, Graves' thyroid disease, occur in women, and I believe this disease to be due to a hypersecretion of the thyroid, its symptoms being exactly those caused by the overfeeding of thyroid, viz., nervousness, restlessness, sleeplessness, palpitation, hot flashes, sweating, and increased irritability of the reflexes. On the other hand, 80 per cent. of all cases of myxedema also occur in women, and this is well known to be due to undersecretion of the thyroid. This hypersecretion of Graves' disease occurs mostly between twenty and forty years of age, in other words during the most active period of thyroid life in women. On the other hand, myxedema occurs almost invariably from forty-five to fifty-five years of age when the thyroid normally begins to atrophy. I wish to emphasize the fact that between these opposite points of profound hypersecretion and practical absence of secretion are all gradations of increased or diminished secretion, and many of the troublesome, unaccountable, intangible symptoms in women are due to this variation in thyroid secretion. The palpitations, the nervousness, the restlessness, the increased susceptibility to pain, and even possibly the misinterpretation of pain in conditions of hysteria I think can be due to misbehavior of this gland.

When the menopause takes place, if this gland, which has normally been hypersecreting once a month, stops its work synchronously with the ovaries, we have the best possible advent of this changed condition. On the other hand, if this gland continues to secrete more than is needed for the organism, we have the hot flashes, the full-headedness, the palpitation, and the nervous phenomena so well known to us as the troubles due to the menopause. As a corollary to these last statements I have found that in delayed menstruation, with or without anemia, no drug is as efficient in causing normal menstruation as thyroid extract, given in three-grain doses three times a day. I have also many times found in feeding thyroid for other purposes that menorrhagia was caused.

We understand the condition of cretinism, but perhaps do not think that a diminished amount of normal thyroid secretion in the young child may be the cause of the fat, flabby skin, dull features, chronic eczemas, erosions and fissures, and perhaps enlarged glands of the neck. I have a number of times seen such cases do better on thyroid than on any other treatment, and the very alteratives which we sometimes give for this purpose and find valuable are those which increase the secretion of the thyroid gland, viz., arsenic, iodide of iron, the iodine of cod-liver oil, and potassium iodide.

The thyroid gland also regulates in some way the elimination of nitrogen in the urine, and we can feed thyroid to patients whether they are obese or not, and increase the nitrogenous output. On the other hand, at the time when the thyroid begins to normally diminish its secretion is the time when men and women begin to add weight. This is especially true of women after the menopause.

Diseased suprarenals give the cause of many of the symptoms in Addison's disease, notably the great diminution of vasomotor tension. Whether this gland has anything to do with the loss of red blood corpuscles in this disease we do not know, but the patient apparently dies of what might be considered an ultimate vasomotor paralysis.

The other functions of the suprarenal glands besides the blood-pressure raising power are still unknown, but it has been lately shown that they have something to do with the production of glycogen (Herter). We certainly do have cases of diabetes mellitus without any pancreatic or nervous disease. I have recently had such a case, and of many treatments tried, the urine being examined weekly, it was found that under the action of suprarenal substance swallowed we could diminish the output of glucose, cause the diacetic acid to disappear and greatly diminish the acetone and ammonia. In this same case thyroid feeding almost caused toxic acidemia. This boy went along very well on suprarenal feeding for nearly a year. For observation purposes the suprarenal was then stopped for two weeks. Post hoc, ergo propter hoc the patient at the end of that time developed diabetic coma and died in a few days. It is also interesting to note that hyperthyroid feeding in Graves' thyroid disease can cause glycosuria.

I have long been suspicious of the suprarenals as having something to do with gout. Just what gout is I will let someone else answer, but with gouty joints, with high tension blood vessels, and in gouty asthmatic attacks I have found small doses of the opposite of suprarenal, viz., thyroid not only of considerable immediate benefit, but tending to cause all kinds of gouty attacks to become very much less frequent. This may be due partially to the action of thyroid on nitrogen elimination.

What the pituitary secretion means to the system is in a measure uncertain. It is probably always hypersecreting in the condition of giantism, is certainly always diseased in acromegaly, and probably if every case of giantism lives long enough he will assume the acromegalic type, giantism being nearly homogenous overgrowth of bone, while acromegaly is irregular bone growth. It is possible that always in the beginning of acromegaly there is a hypersecretion of the thyroid. If this occurs late in life the enlargement seems to be of the ends of the bones and the extremities, although a few of the long bones grow. Certain it is that in acromegaly there is positive formation of new bone as well as an increase of the size of old bone, and this is normal hypertrophy. When this pituitary secretion becomes disturbed we have in these acromegalic cases almost continuous headache, sometimes excruciating in character. I have in several cases found these headaches were made better by feeding pituitary.

A corollary of this increased bone growth might be drawn, viz., to feed young dwarfs pituitary substance.

The glands of the body seem to be more or less interchangeable in their functions, if one is unable to do its work, another seems to take up extra work. This is true of the thyroid gland in acromegaly, and some of the early symptoms of this disease are due to too much action of the thyroid. Later in the disease the thyroid secretion is diminished, and I believe in every authentic complete autopsy on cases of acromegaly the thyroid has always been found atrophied, at least as to its parenchymatous portion, and a large number of the typical signs of acromegaly are due to this pseudomyxedema. Pituitary substance slightly stimulates the heart and contracts the blood vessels, but is greatly inferior to suprarenal in this respect.

The thymus gland atrophies in childhood and disappears after puberty, and hence probably performs some important function in the development and growth of the young child. If it performs any other function, some other gland or glands evidently assume such work after the age of puberty.

The thymus gland contains the largest amount of nuclein and hence of phosphorus of any gland of the body, and will serve the purpose of any nuclein treatment. An extract of this gland is probably a constructor, and hence reconstructive, and can, as far as I am aware, never cause debility and does nothing but good. Inductively it would seem that this gland, which is so active during the period of greatest bone growth of the body, must have something to do with the formation of bone salts. As these earthy salts are all necessary to permanently encapsulate or to heal tuberculous lung lesions, I thought that theoretically thymus should be of value and have found practically that in tuberculous cases it was an aid to whatever hygenic or medicinal treatment was instituted. In other words, these patients very generally gain under thymus.

Many cases of exophthalmic goiter improve under the use of this glandular substance, but I have never found any treatment that would positively stop hypersecreting glands except morphine or codeine.

The thymus gland has been found absent in hemophilia, and it is interesting to note that thymus extract has shown some coagulant action on blood. Hence in hemophilia thymus gland should be tried.

This gland would seem theoretically of value in rickets. Objective cases of rickets in this age of good feeding are now so infrequent that in my non-surgical practice I have had no opportunity to give this treatment a proper test.

In the scurvy of children undoubtedly the blood is not getting what it needs, and perhaps it is the thymus gland that cannot get the salts that it requires, and this is the cause of the bleeding and other symptoms of that condition.

We are so much at sea in regard to the physiology of the internal secretions of the pancreas, spleen, testicles, ovaries, mammary glands and parotid, that we can draw no safe therapeutic indications for their use. Whatever is done in a therapeutic way with these extracts is purely empirical and mostly, as yet, experimental. Of course any gland like the testicles that contains nuclein, and hence phosphorus, will give tonic phosphorus to the system.

Turning now for a few minutes to the blood, and it would seem that chlorosis is due to bad chemistry somewhere, probably in the gastro-intestinal canal, but perhaps some gland is not doing its work. At any rate it is often the fact that though these cases will all get well on either organic or inorganic iron, often best the latter, some of them will get well on some saline.

I have lately been much interested in the study of a case of lymphatic leucemia and believe that some interesting physiological facts have been demonstrated. This case is a man sixty-four years of age, who has all of the glands of his body enlarged, internal and external, as far as I can delineate, as well as a large liver and a fairly large spleen. We have had the patient under careful observation for a year and a half, and find that his white corpuscles remain anywhere from 170,000 to as high as 380,000 per cubic millimeter. Over 98 per cent. of these white cells are lymphocytes, only a little over one per cent. being polymorphonuclear leucocytes, while normally about 75 per cent. of whites should be the polymorphous variety. In the laboratory we settled a mooted point, viz., that these white cells did not break down. If they did, we should have a greatly increased uric acid and phosphorus output. This man's uric acid and phosphorus output were perfectly normal on repeated and continued examinations, *i.e.*, normal for a man with 8,000 white cells. The only treatment that markedly increased this uric acid output was an alkali, viz., bicarbonate of soda. Nucleic acid also somewhat increased it. If uric acid is mainly due to nuclear breakdown, this is pretty positive proof that these white cells do not rapidly disintegrate. On the other hand, while this bicarbonate of soda was being fed for one week his white blood count went from 203,900 to 380,000, while at the same time he lost red blood corpuscles.

Another interesting point was that any treatment that greatly reduced the size of his glands always made his white blood count greater and his red blood count less. This was true of the bicarbonate of soda, and very true of arsenic. Hence arsenic was in his case, at least, vicious treatment, although the glands grew smaller under it.

Nucleic acid was fed him on the theory that as it always causes leucocytosis, *i.e.*, an increased number of the polymorphonuclear cells, if the lymphocytes were the origin of these cells, we ought to cause a great number of them to be formed. Nucleic acid did not cause any increased number of polymorphonuclear cells. If fed in large amount it did cause a diminished white blood count, but also diminished the red blood count.

One pernicious malarial chill reduced his white blood count from 238,000 to 68,000. The next day they went up to 170,000, and on the next chill, which we were unable to stop with enormous doses of quinine, the whites came down to 120,000. From that time on, the chills being stopped, the whites went up to their usual number.

His red blood count ranging between 3,000,000 and 4,000,000 always improved under Armour's red bone marrow and as regularly diminished under any other treatment.

Since the first of last July this man's blood has been counted every week. He has been having red bone marrow almost continually during this period, and his red blood count has averaged about 4,000,000. On October 12 he had been without this bone marrow for five days and his red blood count became 2,510,000, while a week before it was 4,200,000, a loss of 1,600,000 red blood corpuscles in five days without bone marrow. In six days more on bone marrow he had regained 600,000 of these corpuscles.

In this case, then, there is undoubtedly disease of the red bone marrow, also it is pretty good physiological proof that the red bone marrow produces red blood corpuscles, and also good proof that the feeding of red bone marrow supplies that deficiency.

Physiologists are about equally divided as to whether the lymphocytes are the origin of the polymorphonuclear leucocytes, or whether the polymorphonuclear leucocytes grow from the bone marrow. This case, having practically no corpuscles of this variety and his red bone marrow showing such evidence of disease, it would seem pretty good physiological proof that these polymorphonuclear leucocytes are formed in the red bone marrow.

I fear you will consider that this rambling talk has had no definite object, but when discussing the organic secretions, one is so flooded with possibilities and probabilities that it may not be amiss to exchange thoughts on the subject.

## THE SIGNIFICANCE OF OXALURIA.*

BY J. BERGEN OGDEN, M.D.,
OF NEW YORK;
FORMERLY INSTRUCTOR IN CHEMISTRY, HARVARD MEDICAL SCHOOL; ASSISTANT IN CLINICAL PATHOLOGY, BOSTON CITY HOSPITAL; ETC.

Oxalic acid may be regarded as a normal constituent of the urine. It is, however, present in very small amount, the quantity usually not exceeding 0.02 gram. in 24 hours. This acid exists in the urine in combination with calcium—calcium oxalate—which, under ordinary circumstances, is held in solution by another normal urinary constituent, *i.e.*, monosodic acid phosphate. Whenever the production of calcium oxalate is excessive the monosodic acid phosphate becomes insufficient to hold the oxalate in solution, the crystals separate and are found in the urinary sediment.

The term oxaluria is used to signify the presence of crystals of calcium oxalate in the urine. As the term is commonly applied, it may mean that the crystals are present temporarily or that their presence is persistent. Properly speaking, the term should be employed only to those cases in which the crystals are present for a considerable period, for, as we shall see later, oxalate crystals may suddenly appear and as quickly disappear from the urine of any healthy individual who is living on the average mixed diet. The number of crystals found in the sediment may be large or small depending upon circumstances. It should, however, be borne in mind that a few large primary crystals may be of far greater importance than a large number of the small secondary forms. The continued presence of the crystals always shows an overproduction of calcium oxalate which in turn usually indicates some pathological condition that is acting as a cause.

*Causes of Oxaluria.*—One important cause of an oxaluria is excessive fermentation in the gastro-intestinal tract. Dr. Helen Baldwin* produced experimentally in dogs a pronounced oxaluria by feeding the animals on meat and large quantities of cane sugar or glucose. These substances were given until a marked degree of gastric and intestinal fermentation was produced; indeed, in some instances a distinct gastritis was induced. We know that meat contains only an infinitesimal amount of oxalic acid and that cane sugar and glucose contain none, therefore the oxaluria that was produced by the ingestion of these articles of food must have been brought about by other conditions. Dr. Baldwin noticed that the crystals of calcium oxalate were most abundant in the urine when there were distinct indications of an acute or subacute gastritis.

These experiments have proved highly instructive and important. Up to the time that Dr. Baldwin published the results of her research we were without a satisfactory explanation of the cause of oxaluria in many cases and the treatment of such cases was consequently attended with unsatisfactory results. Although Dr. Baldwin has clearly demonstrated that a marked oxaluria may result from the excessive fermentation produced by the ingestion of meat and large amounts of carbohydrates, we have yet to learn whether or not the proteid element is essential for the production of gastro-intestinal fermentation, and if so to what degree; also whether these fermentative changes and the consequent oxaluria can be brought about by the ingestion of carbohydrates alone. We still have no knowledge of the fungus or organism, if there be one, that appears to cause the undue formation of oxalic acid during fermentation. There is practically no doubt that a permanent diminution or an absence of hydrochloric acid in the contents of the stomach favors and is perhaps necessary for the development of this fermentative oxaluria.

There is still another cause of oxaluria which must be constantly borne in mind, *i.e.*, articles of food containing oxalic acid. Some of these substances are sorrel, rhubarb, tomatoes, asparagus, spinach, onions, cabbage, and some of the varieties of grapes and apples. Baroux† claims that when fresh fruits containing citric acid are taken with some of the above mentioned vegetables, oxalic acid is set free. He has reported nine cases, in one of whom, a young man, pain and an acute gastro-enteritis followed a meal which consisted partly of spinach and cherries. In two children the same symptoms resulted from the ingestion of spinach and oranges. We find no accurate record of the urinary findings in his cases. While the claim of Dr. Baroux concerning the chemical processes taking place in the stomach under such circumstances is largely conjecture, we know that oxalic acid is in many instances set free, but how and in what manner, we have yet to learn.

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*Paper read before the New York State Medical Association, New York County, January 19, 1903.

*"An Experimental Study of Oxaluria with special reference to its Fermentative Origin."—The Journal of Experimental Medicine, October, 1900.

†Journal des Sciences de Lille.

Rhubarb and asparagus probably constitute the chief causes of oxaluria from the food. Since oxalic acid is the principal acid of rhubarb we can readily appreciate the amount of harm that may result from the custom of taking stewed rhubarb and rhubarb pie. Sorrel is fortunately little used, while the tomato, the apple, the grape and the onion contain only minute amounts of the acid. If food rich in oxalic acid is taken only rarely and in small amounts, the resulting temporary oxaluria will probably very quickly disappear and be productive of little or no harm. But the dietetic element is no less important, especially in those individuals who are already afflicted with an overproduction of oxalic acid.

It is highly probable that many of the instances of oxalates in the urine are due both to the oxalic acid preformed in the food and to their formation by intestinal putrefaction or fermentation. If, after removing all oxalic acid containing substances from the food, the oxaluria persists, we can be fairly certain that the cause lies in the digestive tract.

*Indoxylpotassium Sulphate and Oxaluria.*—Indoxyl, also sometimes called "Indican," is a normal urinary constituent, and exists in the urine as an ethereal or conjugate sulphate—indoxylpotassium sulphate. It appears to be formed by the oxidation and absorption of indol which in turn is a normal constituent of the intestine and a product of the natural (or normal) intestinal putrefaction. If this putrefaction or fermentation is abnormally great, the indol is produced in unusually large quantity and the output of the indoxyl sulphate is correspondingly large. The tests for indoxyl in the urine are, therefore, an index of the amount of fermentation taking place in the intestine. An important fact is that a well-marked oxaluria is almost always accompanied by an increased amount of indoxyl, showing that there is a more or less intimate relation between them and that they probably have a common cause.

*Character of the Crystals of Calcium Oxalate.*—Calcium oxalate crystallizes from the urine in two typical forms—the octahedral and the dumb-bell crystals. There are, however, various modifications of these two forms, according to the positions of the crystals. You are all perfectly familiar with the octahedral or so-called "envelope" crystal, which is made up of two four-sided pyramids placed base to base, and when viewed from the side their characteristic appearance is that of a square crossed obliquely by two bright lines presenting the resemblance to a sealed square envelope. Frequently these octahedra coalesce in such a way as to have the appearance of an open umbrella. constituting the so-called "umbrella" crystal. Sometimes each half of the octahedron is connected by a short quadrilateral prism and such have been termed "prismatic" crystals of calcium oxalate.

The dumb-bell and oval crystals are more rarely found in the urinary sediment than the octahedral forms. The dumb-bell crystals are always associated with the oval or circular forms which have bright centers showing their biconcavity. Frequently two dumb-bells are found crossed at their centers forming a double dumb-bell crystal.

Since calcium oxalate crystals may be found in either an acid or an alkaline urine, the colorless dumb-bell crystals should in all instances be distinguished from the yellowish-red or brown dumb-bells of uric acid and of acid ammonium urate, and the octahedral forms should not be mistaken for the ammoniomagnesium or triple phosphate crystals found in the sediment of an alkaline urine. These various forms of crystals are usually readily distinguished by their microscopic appearance and the accompanying elements, or by chemical tests.

*Primary and Secondary Crystals.*—From a clinical point of view it is important that a distinction be made between those crystals that are likely to produce mechanical disturbances in the urinary tract and those that are harmless. Two classes of crystals are, therefore, generally capable of recognition, *i.e.,* the primary and the secondary. Primary crystals are those that have separated from the urine inside the body; they usually consist of the large octahedral and most of the oval and dumb-bell forms. Secondary crystals are those that have separated after the urine has left the body; they are usually the very small octahedral forms and perhaps a few of the very small oval, circular and dumb-bell crystals. These secondary crystals are most commonly found in a urine that has been allowed to stand for some time. They generally separate from a urine that is highly charged with calcium oxalate.

*Mechanical Action of the Crystals.*—The primary crystals of calcium oxalate often produce a more or less marked irritation of the urinary tract, especially if they separate from the urine in the kidney itself or in the renal pelvis; the mechanical action is usually much less severe if the crystals separate in the bladder. Blood globules are the chief accompaniment of the oxalate crystals in the sediment, and there may even be abundant hemorrhage. If the kidney is the seat of an acute irritation, renal casts with adherent blood globules, and sometimes with calcium oxalate crystals imbedded will be found; if the renal pelvis is involved, the small caudate cells which are more or less characteristic of the superficial layer of the pelvis of the kidney will be found accompanying the blood and the crystals; and if the bladder is the seat of the mechanical disturbance, the large squamous cells and the round dense cells from the neck of the bladder will usually serve to locate the source of the blood. Such severe mechanical irritation is usually accompanied by pain, often frequent and painful micturition and by a more or less concentrated urine. If the separation of these primary crystals continues for some time, the tendency to a calculus formation in the pelvis of the kidney or the bladder is, of course, very great and especially in those cases in which there is or has been considerable hemorrhage.

*Oxaluria and Diabetes Mellitus.*—There appears to be a rather close relation between diabetes mellitus and an oxaluria. This is usually seen in two classes of cases: (1) those in which the diabetic patient is allowed to take such articles of food as he likes, and who, on account of his craving for sugars and starches, subsists largely on carbohydrates; and (2) those in which the diet is restricted almost entirely to a meat diet. It seems to the writer that the explanation of the oxaluria in such cases is probably the gastro-intestinal fermentation which results from either the excessive carbohydrate diet or the abundant ingestion of meat—a nitrogenous diet.

Not infrequently a marked oxaluria is an accompaniment of nervous disorders, especially those attended with mental depression, a subacute or chronic prostatitis, and diseases of the heart and lungs. I am unable to give you any plausible explanation of what appears to be an excessive formation of oxalic acid in these cases. In some instances both the food and the intestinal digestion may be at fault, but there often appear to be other unknown causal factors. It has been claimed by some that under pathological conditions oxalic acid circulates as such in the blood, and on account of its poisonous action, causes a certain train of symptoms of which nervous phenomena are especially prominent. This theory appears, however, to be untenable. We have no satisfactory proof that oxalic acid ever circulates as such in the blood, or that the nervous symptoms are the result of the direct or indirect action of the acid or of calcium oxalate. In diseases of the heart and lungs the accompanying oxaluria has been ascribed to deficient oxidation. This theory is based on the belief that oxalic acid may exist in the body as an intermediate product between uric acid and urea, and that it is formed as the result of incomplete oxidation. This explanation may be, to some extent true, but further investigation is necessary to prove that an oxaluria actually has such a cause.

262 Fifth Avenue.

## THE PROGNOSTIC VALUE OF THE DIAZO-REACTION IN PULMONARY TUBERCULOSIS.

BY FRANCIS CARTER WOOD, M.D.,
OF NEW YORK;
INSTRUCTOR IN CLINICAL PATHOLOGY: COLLEGE OF PHYSICIANS AND SURGEONS, COLUMBIA UNIVERSITY; PATHOLOGIST TO ST. LUKE'S HOSPITAL.

IN one of his early papers on the diazo-reaction, published in 1883, Ehrlich speaks of the prognostic value of the reaction both in typhoid and in phthisis. He considered that a marked reaction in either disease was an indication of a severe infection and that in pulmonary tuberculosis especially, a continuous and strong reaction was a sign of very grave prognostic import. A number of theses and papers by other observers were published about this time, showing that in a large proportion of cases the reaction became more strongly marked as the disease advanced and frequently afforded useful prognostic data; but that there were fatal cases which did not show the diazo-reaction before death and that there were mild cases in which, though a strong reaction was present at some time during the course of the disease, yet the patient progressively improved.

Since 1884 but little has been published on this subject; but with the present revival of chemical and microscopical diagnosis in internal medicine, the diazo-reaction has again come into prominence especially through the writings of Michaelis, Schraeder and Nægelsbach, Becker, Clemens, and others. The more recent writers, on the whole, agree with the original views published by Ehrlich, but some have been unable to confirm his results. The subject is one of such general interest that it seemed proper to pursue it further and especially on a large series of cases under similar conditions. This opportunity occurred in the wards of St. Luke's Hospital, where a large number of cases of progressive phthisis were under observation. A considerable number of these cases came to autopsy and the anatomical findings were of value in controlling the results of the physicial examinations. Owing to the unfavorable conditions under which tuberculous cases are placed when treated in hospitals within city limits, it is the rule at St. Luke's to retain in the hospital for any length of time only such patients as seem beyond the hope of cure by climatic treatment, and to urge all others for whom there is a reasonable hope of recovery to leave the wards and to attempt to find either homes in the country or care in one of the sanatoria for tuberculosis. In this way the cases are immediately divided into two sharply distinguished groups. In the first are all early, non-progressive cases, which as a rule leave the hospital in a few weeks, often sooner. In the other group are those cases in which an active and progressive process is under way. Many of these cases die in the first few months of hospital treatment; others live for a year or more; but very few leave with any improvement in the pulmonary condition. Opportunity is thus offered to study a series of severe cases of tuberculosis and to observe the variations in the urinary reactions.

The total number of cases examined was 363. In all those patients who remained in the hospital for more than a few days the diagnosis was verified by the finding of tubercle bacilli in the sputum. Only in a very few, exceptionally mild cases, were the bacilli not found during the short stay of these patients in the wards. Of these 363 cases, 117 died. The results of the examination of the urine of the fatal cases showed that in 81 cases, or 69 per cent. of those who died, the diazo-reaction had been continuously positive before death. In 22 cases, or 18 per cent., there had been a positive reaction during a large portion of the time during which the patient had been treated, but this disappeared shortly before death. In other words, about 90 per cent. of the fatal cases show a positive reaction during the last few months of life. Of the 14 remaining cases which at no time showed a reaction, ten had the symptoms of a chronic diffuse nephritis; and two of the cases undoubtedly died from the kidney lesion. The kidney lesion seems to interfere with the excretion of the substance producing the diazo-reaction, a point to which Clemens has called attention. Two other cases not giving a reaction died of hemorrhage from the rupture of a large vessel in the lung, though the tuberculous process was not active at the time.

The cases which were discharged numbered 246. A certain number of them left the hospital for reasons of discipline or because they did not like the treatment which they received. These numbered 22. Twelve were severe cases and had a continuous positive reaction. Three were positive at some time; seven were negative. Of the remaining 224 cases which left the hospital in good condition, 16 were observed for so short a time that their results should not be included here; some of these cases gave faint positives or a positive on the day after admission and a negative a few days later. Of the 208 cases left after substracting the above; that is, cases which could be fairly considered as mild non-progressive forms; 188, or 90 per cent. of those examined for over four weeks showed no reaction. The 20 other cases gave alternating reactions; that is, positive one week or month, and negative the next; so that no conclusion could be drawn from their examinations. If we take, then, the cases which may be considered as unfit for hospital treatment and capable of cure, we find that some 10 per cent. give occasional diazo-reactions, so that it does not seem possible in this country to apply the rule which is suggested for the German sanatoria by Michaelis and Clemens, to exclude all cases with a positive diazo as unfit for climatic treatment, especially as a good many persons with a very slight lesion give a diazo-reaction on admission, and then, as they improve under the altred hygiene, the good food, and the rest in bed which they obtain in a hospital, never give a reaction during the further period of examination.

If we collect all the cases which were admitted to the hospital and examine them to see how many gave a positive reaction at some time during their residence, we find the number to be 154, or 42 per cent. of the whole. The number would be considerably reduced if we were to exclude those cases which gave a single positive reaction on admission and then a continuous negative. If now we compute the number of fatal cases in the 154 which gave a single positive reaction the number will be found to be 103; that is, 66 per cent. of those who apply for hospital treatment and are found to give a positive reaction will die, and the largest number within six months.

These results correspond very well with those reported by others. For example, Clemens found that 87 per cent. of the fatal cases show a positive reaction. Rutimeyer found that 85 per cent. of the fatal cases in his series gave a positive reaction; while Michaelis noted that 72 per cent. of the cases giving a positive reaction die within six months.

Of the exact chemical nature of the substance or substances which cause the diazo-reaction, we are as much in the dark as when Ehrlich first published the method nearly twenty years ago.

We know only that it is produced by the actions of bacterial toxins and during the course of abdominal metabolism such as goes on in a patient suffering from a gastric carcinoma or from a chronic heart lesion. It may be produced in animals by the injection of the toxins of the tubercle bacilli as they exist in Koch's tuberculin T. R. It is easily destroyed by the alkaline fermentation of the urine and disappears from that fluid on long standing or on prolonged boiling, which will distinguish it from the drug reactions especially from that produced by naphthalin or $\beta$ —naphthol. In general the drug reactions can be recognized by any one familiar with the color of the diazo-reaction, so that there is but little danger of confusion. The foam is never salmon pink, but yellowish or purple. The reaction is not dependent upon temperature, for some of the cases in my series showed a constant and strong positive with a normal or subnormal temperature.

The appearance of the diazo-reaction in the urine is not a constant phenomenon. In looking over a series of tests carried out for a long period of weeks or months, it will be noticed that the reaction may be continuous and strong for a month or so and then suddenly disappear for a week or so only to reappear later on in its original intensity. During this time the condition of the patient may grow progressively worse so that it would be expected that the reaction would remain quite constant. The conditions underlying this variation are not completely understood. It was noticed by my assistant, Dr. N. E. Ditman, that the reaction seemed to vary somewhat with the atmospheric conditions; that is, on excessively hot, damp days the reaction in a group of patients was usually more intense than on cool, dry days. This variation is no doubt due to the fact that the condition of the patient was influenced unfavorably by the excessive heat. Perhaps also the question of food and the body metabolism may be concerned. The variation, however, was never very great and any case showing a strong positive reaction, or a negative, continued to give a positive or a negative, the action of the temperature not being sufficient to completely suppress the reaction or to bring it on. An important factor in suppressing the reaction in the urine is due to drugs. As Burghart has shown, some of the tannic compounds, such as tannalbin, tannigen, or even a decoction of uva ursi which contains tannin, are capable of causing a disappearance of the reaction from the urine. Creosote and creosotal also cause a great diminution in the intensity of the reaction or may even suppress it. Clemens has also shown that the presence of bile, urobilin, or hydrochinon in the urine, may interfere with the reaction. In such cases he recommends the removal of the pigment by the addition of a few drops of lead acetate solution or a little animal charcoal and then filtering. It is often possible to obtain a reaction by shaking out the acidified urine with ether or amyl alcohol, neither of which extracts the diazo-substance. The intense yellow reaction which we often meet with in the urine of phthisical patients has been shown by Burghart to be due to phenol which is often present in excess in the urine of the severe cases and as a rule completely obscures the reaction. The excess of phenol in such urines can be easily demonstrated by adding to a test tube of the urine some strong nitric acid and boiling. After the mixture has cooled some bromine water is added and if a marked turbidity of the urine is produced an excess of phenol compounds may be assumed. This excessive production and excretion of phenol compounds is often observed in severe cases of phthisis and often accounts for the frequent absence of the reaction at that time. Cases, however, of excessive phenol excretion have been observed in which the diazo-reaction could still be easily obtained so that other causes must play some part. One possibility is that the excretion of the diazo substance in the urine takes place irregularly as has been noted in the normal excretion curve of other substances, notably urea. As is well known the urea of the body is not excreted constantly, but there may be a slight retention for a day or so and then the surplus will suddenly be got rid of through the kidneys. This may also be true of the diazo substances. As an evidence of this we may note that in the fourteen cases of phthisis which died without a positive reaction having been present, ten had an active chronic nephritis with casts and albumin. The urinary excretion in nephritics is known to be exceedingly irregular and retention of metabolic products is often seen extending over considerable periods of time and it is not improbable that the diazo bodies are subject to the same conditions.

The reagents used were those recommended by Ehrlich in the Charité-Annalen in 1886. Two solutions were employed which were mixed at the time of using:

| | | |
|---|---|---|
| *I* | Sulfanilic Acid | 1 |
| | Strong Hydrochloric Acid | 50 |
| | Aq. ad | 1000 |
| *II* | Sodium Nitrite | .5 |
| | Aq. | 100 |

Two c.c. of *II* are added to one hundred c.c. of *I*. The mixture will keep in good condition for about two days in a cool place. Equal parts of urine and the reagent are mixed in a test tube, and one-seventh or one-eighth part of ammonium hydrate is added. The salmon pink color of the foam obtained after shaking is the essential point in a positive reaction.

If we sum up in concise form the results of this study they will be as follows:

I. If the urine of a case of pulmonary tuberculosis shows no diazo-reaction and a kidney lesion can be excluded the prognosis is favorable. Only ten per cent. of the moderately severe cases here recorded gave a reaction and in a number of these the reaction disappeared on treatment. Early cases not ill enough to apply for hospital treatment do not give the diazo-reaction.

II. If the urine of a case of pulmonary tuberculosis shows an ocasional diazo-reaction the prognosis is not necessarily grave as only some 66 per cent. of the patients showing an occasional positive reaction die.

III. If the urine of a case of pulmonary tuberculosis shows a continuous strong diazo-reaction the prognosis is very grave since a large proportion of such cases die within six months.

IV. The presence of a diazo-reaction on the first examination of a patient should not debar the case from a thorough trial of climatic treatment in a proper sanatorium.

I wish to express my obligation to Dr. Norman E. Ditman, late pathological interne at St. Luke's Hospital, for his valuable assistance in carrying out the reactions and in the preparation of this paper; also to Dr. J. D. Condit and Dr. F. G. Hodgson, who carried out a portion of the tests during their service as pathological internes at St. Luke's Hospital.

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## HYPERACIDITY OF THE URINE.

BY T. W. HASTINGS, M.D.,
OF NEW YORK;
ASSISTANT INSTRUCTOR IN CLINICAL PATHOLOGY, CORNELL UNIVERSITY MEDICAL COLLEGE.

The recognition of symptoms of disturbance of the genito-urinary tract arising from the acid character of the urine is found in medical books of 20 to 30 years ago[1]; and recently Brown[2] has reported nine cases presenting symptoms of cystitis in which the symptoms could be directly referred to excessive acidity of the urine, this hyperacidity being regarded as probably of neuropathic origin, since all these cases "exhibited neurasthenical, neurotic or hysterical manifestations" and the bladder symptoms became much worse "under severe mental or nervous strain; and by the result of treatment."

In the writings of 20 years ago, *e.g.*, Gross' Surgery, Vol. II, 1882, p. 704, the acid character of the urine is given as one of the causes of incontinence in children, and to-day in some cases afflicted with enuresis, it will be found that excessively acid urine is being voided, the condition improving or disappearing entirely under treatment directed to correction of the hyperacidity.

Some books on nervous diseases describe a "lithemic neurasthenia"[2]; a condition improved by treatment with acid or alkali, the alkali being more often beneficial, in addition to measures to improve the general condition. The acid or alkali was given empirically, no means being known for determining beforehand which would be the better.

Brown's cases correspond to the cases improved by taking alkalies. The determination of the excessive acidity of the freshly voided urine furnishes a reason for the administration of alkalies rather than acids in such cases.

Text-books[3] on genito-urinary diseases give "over-acid urine" as one of the causes of "nephralgia," a term applied loosely to a dull deep ache extending from the back or lumbar region downward and forward to the bladder and urethra, and the urine of such cases is described as follows: high specific gravity, deep color, the "alkaline tide" after meals usually absent, a heavy precipitation of amorphous urates after cooling and of uric acid a few hours after voiding, and more or less pus present in proportion to the amount of irritation and the duration of the complaint. The precipitation of urates and uric acid should have been considered of little significance, but the absence of the "alkaline tide" and the presence of pus cells, or rather polynuclear leucocytes in varying amount are suggestive of an over-acid urine.

*The Normal Acid Reaction of the Urine.*—Normally the urine shows a decrease in acidity or a faintly alkaline reaction to litmus a few hours (1 to 3), after eating, the decrease varying in inverse ratio to the amount of acid secreted in the gastric juice and with the nature of the food. Sahli[4] states that this relation to the gastric juice is such that with a pathological hyperacidity of the gastric juice the urine may show a deposit of or readiness to precipitate phosphates which is erroneously looked upon as a "phosphaturia" due to some anomaly of metabolism, while in fact this reduction in acidity and the deposit of phosphates is a basis with likelihood for the diagnosis of a gastric affection.

An excess of meat in the diet, in that it furnishes much proteid, and the increased destruction of body-proteid in fevers favor a marked acid reaction to the urine, but in the cases of hyperacidity with symptoms referred to, the diet is rarely found at fault and the patients are afebrile. It is probable that the over-acid reaction depends more often upon the relation of the primary and secondary phosphates in the urine than upon an excess of phosphoric acid derived from the food or from excessive destruction of body-proteid.

The urine does not contain free acid under any conditions (Neubauer and Vogel, Analyse des Harns, 1898, p. 2).

The normal acid reaction is due to acid salts, principally if not entirely to the primary salt of phosphoric acid ($MH_2PO_4$).

Hammarsten[5] states that from neutral substances (proteids, etc.) arise within the body acids such as sulphuric and phosphoric and organic acids as hippuric, uric, oxalic, and aromatic oxy-acids, from which it follows that the acid reaction cannot be dependent upon one acid alone, but the general opinion is that the acidity of the urine of man is due to the primary salt of phosphoric acid.

The degree of acidity does not, however, depend alone upon the amount of primary salt present, but also upon the relation between the primary and secondary salts ($MH_2PO_4$ and $M_2HPO_4$).

In normal urine the primary salt may vary from 34.9 per cent. to 74.2 per cent. of the total phosphates, and when 34.9 per cent. or under the reaction is amphoteric to litmus in all other cases acid.[6] Of the total phosphoric acid in 24 hours about 0.6 is in the form of the primary salt and 0.4 in the form of the secondary salt.[7] Amphoteric reaction to litmus is obtained when the solution contains 0.3 to 0.5 of the primary salt and 0.7 to 0.5 of the secondary salt.[8] The primary salt is acid and the secondary salt alkaline against litmus, and both may be present in solution in the proportions last mentioned without the one interfering with the reaction of the other to litmus, thus explaining the amphoteric reaction.

*Estimation of Acidity.*—The old idea, still prevalent, that excessive acidity is indicated by the precipitation of uric acid and oxalic acid is without good foundation. In certain febrile conditions and in concentrated normal urine, the urates and uric acid are often quickly precipitated causing at first a diffuse cloudiness and later, after standing a few hours, a sediment. The acidity of such a urine may or may not be increased; and, further, the precipitation of these substances does not necessarily mean an increase in the excretion of these substances, for their precipitation probably depends upon the relations between and interaction among the urates and phosphates, rather than upon the amount of uric acid present.[9]

Although many over-acid urines contain crystals of oxalate of lime this is no indication of degree of acidity nor is it an index of the amount of oxalic acid present, for such crystals "are found with every degree of acidity from highly acid to alkaline; with every degree of specific gravity and with every color" (Baldwin[10]).

The precise method for estimation of the acidity is that for the estimation of the primary salt of phosphoric acid (Hammarsten[11]). Of the simpler methods, the reaction to litmus paper gives no idea of the degree of acidity and in the titration of phosphates litmus gives no sharp color change.

Neumeister's[12] modification of Maly's method is unreliable, according to Nägeli[13]. Blumenthal[14] recommends it. The best method to employ is that recommended by Nägeli[15], similar to the method used to determine the total acidity of the gastric contents, using phenolphthalein as an indicator and titrating with a decinormal solution of sodium hydroxide ($\frac{N}{10}$ NaOH).

This method gives roughly the excess of acid-equivalents over the base-equivalents, but is no index of the basic-capacity of the urine, for only as much alkali-equivalent is added as is already contained in the phosphates corresponding to the primary salt ($MH_2PO_4$) which enters into the reaction.

Those acids which are excreted in the form of neutral salts (as NaCl) or in the form of salts reacting alkaline to phenolphthalein (as secondary phosphates, $M_2HPO_4$) are not included in the acidity (Sahli[16]).

Haig[17] found the average acidity of the 24 hours' urine in health equivalent to 5.5 gm. of oxalic acid or 3.5 gm. of sodium hydroxide. Hammarsten[18] gives the acidity equivalents for 24 hours as 2 to 4 gm. of oxalic acid or 1.3 to 2.39 of hydrochloric acid. Haig's equivalent of 3.5 gm. of sodium hydroxide in terms of hydrochloric acid is 2.44 gm., so that both of Haig's equivalents are higher than those of Hammarsten.

Brown found that normal urine immediately after withdrawal from the bladder was neutralized by 2.5 c.c. of decinormal sodium hydroxide solution for 10 c.c. of urine, or 25 c.c. for 100 c.c.

Provided these patients were passing the average 1,500 c.c. of urine in 24 hours the equivalents in terms of oxalic acid and hydrochloric acid are considerably below Haig's, but within the lower limits of Hammersten.

Among dispensary patients of various sorts with normal urines we have found the average degree of acidity to be 3.1 c.c. of decinormal sodium hydroxide solution in 10 c.c. of urine, equivalent to 2.4 gm. of sodium hydroxide in 24 hours, or a little over a fourth less than Haig's figure. In the normal urines of healthy persons the variation has been from 1.5 to 4.5 c.c. of decinormal hydroxide solution.

In estimating the hyperacidity, urine not over a few hours old should be used, if albumin is present it should be removed, and, if dark in color the same should be diluted to prevent interference with the sharpness of the change in color of the phenolphthalein. To 10 c.c. of urine add a few drops of an alcoholic solution of phenolphthalein (0.1 per cent. in 50 per cent. alcohol), and titrate with decinormal sodium hydroxide solution to a well-marked red color. The precise tint depends of course upon the tint for which the decinormal solution has been standardized. The period of the day in which the urine is taken matters but little, since a urine which is sufficiently acid to produce symptoms does not show the marked reduction in acidity or alkalinity seen in a normal urine after meals.

A hyperacid urine shows a marked acidity throughout the 24 hours. After standing a few hours the normal decrease in acidity may interfere with the estimation in a urine slightly above normal, but an overacid urine which is the cause of symptoms will often give an acidity 3 to 5 times above normal 10 to 24 hours after voiding.

The so-called "acid fermentation" will not interfere with the estimation, for the urine probably never undergoes such a fermentation in that the change in color and the deposit of crystals of uric acid and oxalate of lime are unaccompanied by an increase in acidity, as noted by Roech[19] in 1874.

Roech stated that the acidity of the urine gradually decreased from the moment of voiding and that a deposit of urates and uric acid did not mean an increase in acidity but was due to concentration, in over 20 urines followed from day to day.

Urine which shows a faintly alkaline reaction to litmus will sometimes show a slight degree of acidity with phenolphthalein. Such a urine will usually be found to be amphoteric to litmus.

*Note.*—Solutions of ammonium carbonate (*e.g.*, in the urine) react alkaline to litmus and produce no change (to a red color) with phenolphthalein, thus accounting for a urine alkaline to litmus and at the same time showing a certain degree of acidity when titrated with $\frac{N}{10}$ NaOH solution with phenolphthalein as an indicator.

*Cases of Hyperacidity with Symptoms.*—Brown[20] designated the normal acidity 10 (= 2.5 c.c. $\frac{N}{10}$ NaOH for 10 c.c. urine) for convenience, and his cases showed degrees of acidity varying from at least twice above normal, to nearly five times normal. A degree of acidity equivalent to 4 c.c. is often found without symptoms, but as in Brown's cases urine above 5 or 6 c.c. often produces symptoms in the genito-urinary tract, such as burning on micturition, frequent micturition, enuresis, and symptoms of cystitis in neurotic individuals particularly.

Among 100 cases, 40 presenting symptoms of disturbance of micturition in the course of some affection were tested in regard to acidity of the urine and 30 of this number were normal. These 30 cases included acute articular rheumatism 2, acute muscular rheumatism 1, chronic interstitial nephritis 18, chronic cystitis and urethritis 2, alcoholic hepatic cirrhosis 1, carcinoma of rectum with marked secondary anemia 1, median palsy 1, hemiplegia 3, and facial neuralgia 1.

Ten cases including acute articular rheumatism 3, chronic interstitial nephritis 6, and chronic valvular cardiac disease 1, gave an acidity varying from 6 to 14 c.c., and the disturbance of micturition was no greater than in the 30 negative cases.

In 19 cases of urethral and cystic disturbances with symptoms suggesting inflammation of these parts no other causes than a neurotic individual and an increased degree of urinary acidity (from 5 c.c. to 15 c.c. of decinormal alkali solution) were found to account for these symptoms, which disappeared under attention to the general condition and the taking of alkalies (sodium bicarbonate or potassium citrate) without local treatment.

Three of these cases had apparently recovered from recent attacks of urethritis.

As stated by older writers, hyperacidity of the urine is found to be the cause of some cases of enuresis and the condition is improved or cured by the administration of alkalies or of strychnine. In 10 of these cases the degree of acidity varied from 5 c.c. to 11 c.c. of decinormal alkali solution and in 10 similar cases the acidity of the urine was normal.

The simple treatment with alkalies causing disappearance of the symptoms in these over-acid cases upholds the view that hyperacidity alone is at times the cause of the condition, but the cause of the hyperacidity is not so readily determined, in that the dietary in these cases seems to have been normal, the average amount of exercise taken, and the general health excellent. No inquiries were made in regard to the use of "preserved foods" which might contain boric or benzoic acids or borax.

From the experiments of Tunnicliffe and Rosenheim[21] we learn that the taking of boric acid does not increase the acidity of the urine, though we find statements to the contrary, while borax may increase it but slightly.

The third set of cases includes 21 diagnosed as neurasthenia after thorough clinical and laboratory examinations, these patients referring to some disturbance of micturition, among the numerous complaints in regard to disturbances in various parts of the body.

The only abnormal change in the urines of 14 of these cases was an increase in acidity, from 5.5 c.c. to 12 c.c. of decinormal alkali solution, corrected by a more persistent giving of alkalies than required by the cases of enuresis and of genito-urinary disturbance without the marked stigmata of neurasthenia.

The seven remaining cases showed normal degrees of acidity, suggesting that hyperacidity in such cases may be of neuropathic origin, as suggested by Brown, thus accounting in part for the necessity of persistent administration of alkalies in addition to treatment of the general condition.

Some of the urines from the above cases quickly deposited urates, uric acid and oxalate of lime, these deposits being in no way related to the degree of acidity. Of the 47 negative cases with an acidity below 5 c.c. of decinormal alkali solution 11 (23.4 per cent.) with an acidity from 1 c.c. to 4.5 c.c. deposited urates, uric acid, or oxalate of lime soon after voiding. Of the 53 positive cases with degrees of acidity from 5 c.c. to 15 c.c. of decinormal alkali solution 15 (28.3 per cent.) deposited urates, uric acid, or oxalate of lime, and 38 cases, one with an acidity as high as 15 c.c., showed no deposit after standing twenty-four hours.

In three urines (acidity 8 c.c.) the primary ($MH_2PO_4$) and secondary ($M_2HPO_4$) phosphates were respectively 0.7 and 0.3 of the total, while the total phosphates were low, 1.5 gm. to 181 gm. in 24 hours.

The number of cases referred to is insufficient to give a definite idea of the frequency of occurrence of such cases, but some of them serve to add to the value of Brown's reported nine cases, and to suggest a simple and reasonable method of treatment for some cases of frequent micturition and nocturnal incontinence.

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# THE PROGNOSTIC SIGNIFICANCE OF ALBUMIN IN THE URINE.

BY EDWARD W. LAMBERT, M.D.,
OF NEW YORK.

IS IT possible to make a differential prognosis when albumin is found in persons apparently healthy?

Injudicious living is the cause of most of the bodily ills from which we suffer, and is also that which induces unduly early degeneration in the majority of cases met with by medical men. Injudicious living I mean to be taken in the broadest sense. It includes the excessive wear and tear of an active business life, the nervous strain and worry necessary in the mad rush to become rich; the incessant drain upon one's vitality by the daily excesses in eating, the abuse of alcohol and tobacco, and the excesses common to those who have never learned the art of self-control. In such cases, sooner or later, largely dependent upon the inborn vitality of the individual, occur changes in the minute tissues of the bodily organs. The organ which ordinarily gives the first hint of this commencing degeneration is the kidney. It would be a waste of time to describe either its minute anatomy or functions. We all know it is the most important excretory organ, and that perfect peace reigns when its functions are normal. One of the first symptoms the kidney gives that something has gone wrong in the complex mechanism and functions of the body is the passing of albumin with the urine, more or less abundantly. In my judgment no healthy individual has this substance in the urine, and its presence is a sure indication that something is out of gear somewhere in the functions of the body. On finding this albumin must we infer that the individual is doomed to an unduly early death or that he necessarily has an organic disease? By no manner of means, as the kidney is so sensitive to temporary disorders, so sure to carry off every abnormal product found in the blood, that it often suffers from temporary disability, quickly rallying when the offending substance has been eliminated. Again, when sudden excessive heat or cold prevails, and the nerve centers are temporarily depressed, the kidney feels the lack of its proper nerve supply, allows albumin to pass through, coming back to its normal function without permanent damage as soon as the excessive temperature ceases. It is not necessary to consider the many causes of albuminuria, known and suspected, because their name is legion, and you know well enough that most causes are temporary in character, doing no apparent injury unless the cause is continued long enough or is frequent enough to start tissue changes in the structure of the kidney and producing in time a fatal termination.

With this introduction this paper has been written from the point of view of a life insurance examiner, to see if any information can be given by which one can judge in any given case whether the albuminuria is due to temporary conditions or is the beginning of a degeneration of the kidney tissues, necessarily fatal. In other words, is it possible to differentiate in regard to prognosis in apparently healthy persons between temporary albuminuria and that which means such tissue changes as must necessarily seriously interfere with the expected longevity of the individual? Please remember that an applicant for life insurance is not knocking at our door for treatment. He presents himself as a presumably healthy person. He is surprised, annoyed, often angered, sometimes frightened, when informed that anything is wrong. The medical man is abused, called a crank, narrow-minded and a fool, with strong adjectives prefixed to the fool. If a rejected man happens to live ten years the case is quoted, brought up as illustrating the absurd rulings of the doctor, the accuser forgetting the many apparently similar cases which have proved fatal in the meantime. Our learned Professor Osler wrote a very interesting article in 1901, showing how some men having been rejected by prominent life insurance companies were still living and in good health after many years, and emphasizing the importance of basing a judgment less on the urine than on the general condition of the applicant. Then he goes on to show very clearly that men living a most injudicious life are rejected, but being disturbed by the rejection consult their family physician, receive most excellent advice and live many years in excellent health. This is a good criticism, but the Professor must remember that the men did not change their injudicious living until the life insurance doctor had refused them, and their wise decision followed the rejection. The medical examiner cannot assume that any man having lived a reckless life for thirty or forty years is going to suddenly change to a sober, temperate one. Unfortunately, my personal experience has been that men of forty, fifty or sixty years, who have never exercised self-control in regard to their animal desires, do not change suddenly and become models of virtue. They may be frightened for a short time, try reformation, but the tendency is to return to their former habits. The Professor ends his article with this true statement: "That a trace of albumin and a few tube casts are danger signals, the red lights of danger, which may mean an open drawbridge or a wrecked road-bed ahead, and may be simple warnings for the engineer to go slow."

I can best illustrate my opinion on this subject by giving a few leaves from my experience during the past forty years.

From 1868, when I began regularly to test for albumin, until 1888, during which time I was daily engaged in making personal examinations, persons declined for albuminuria died within twelve months after their rejection, saving in losses to the company each year sufficient to pay the entire expenses of the medical department in New York City.

Let us look at the different varieties of albuminuria. First the so-called physiological albuminuria. Two partners came in for examination, both hearty, fine-looking specimens of physical vigor. Albumin was the only blemish in either case. Number one had such a faint trace that after repeated tests Dr. Edward Curtis and I thought it must be a case of the much-talked-of physiological albuminuria. The man died in eighteen months of Bright's disease. Case number two had excessive albuminuria, was rejected, but lived many years until I lost track of him. Our faith in this kind of albuminuria was badly shaken.

Secondly, let us consider the so-called cyclic or intermittent albuminuria. That such a condition is quite common is beyond dispute. A gentleman whom I had accepted a few years before came into the office one afternoon to take the largest policy the company then issued. He was a personal friend and a fine specimen of a healthy man. To my disgust and his very great annoyance I found distinct traces of albumin. He went uptown to see his family physician and was told to bring a morning specimen for examination. Nothing was found and on his way to his office he came to see me about 11 o'clock, and I could find nothing abnormal. At my request he called again about 3 P.M., with the result of albumin being distinctly present. I watched him for weeks and could always find albumin after 12 noon, but never before that hour. The man was taken by other companies and I was severely criticized. I received a long scientific explanation from an uptown expert that there was no kidney disease. The man died five years later of serous apoplexy due to disease of the kidney, the death certificate being signed by my learned uptown expert, who stated in his death certificate that the disease had lasted to his knowledge five years. On the other hand, many have come before me presenting albumin in the urine so evidently due to temporary causes that a favorable judgment was given, the parties living many years in the best of health. Tests made at our office upon members of the medical staff show that few men pass six months without occasionally having albumin and tube casts in their urine. Cases can be given in abundance illustrating the dangers of albuminuria, but enough has been said to demonstrate the difficulties presented to the medical examiner when called upon to make a differential prognosis in albuminuria. The amount of albumin found gives no necessary evidence of possible future danger.

Thirdly, let us take up the albumin of adolescence occurring in young persons between the ages of seventeen and thirty. These cases cause less worry to the medical men, as most are temporary and the prognosis is good. The physical condition and the mode of daily life are more important factors in young subjects than the albuminuria.

In the past few years we have brought the microscope to aid us in forming a prognosis, with the result that it is confusion worse confounded. Hyaline casts abound, granular casts are not infrequent in urine free from albumin. The older the individual the more frequently do we find the various kinds of tube casts. In young subjects of both sexes having albuminous urine, the microscope often shows hyaloid bodies, usually club shaped at one end and tapering at the other, striated, somewhat larger than a tube cast, which have attached to their larger extremity a cluster of highly refractive, mononuclear, epithelial cells, about twice the size of a leucocyte. These cells, as a rule, show no granulation of the protoplasm. They are usually joined together at their smaller extremities, thus radiating from a common center. The albumin in these cases is usually transient, often disappearing in twenty-four hours. Ninety per cent. of these cases are thirty years and under, and it is extremely rare to find them in persons over forty.

What is the practical result to be drawn from this condition of the kidneys, and what is the prognosis in each case? The amount of the albumin gives no indication of the future result.

The presence of tube casts of any variety does not necessarily mean permanently diseased kidneys, as the casts are found too often in persons otherwise healthy. The most important factor, and one too often neglected, is the daily manner of the life of any individual. The worry necessary to the carrying out of large financial schemes, the habit of having too many financial operations going on at the same time, the excessive use of food highly seasoned, of great variety and containing too much nitrogen; the abuse of alcohol and tobacco, the excessive yielding to the other animal appetites, give as a natural sequence the loss of nature's best restorer, sleep. From my experience and point of view it would seem that the prognosis depends more upon the daily mode of life than upon the findings in the urine.

## NARCOTIC ABUSE AND THE PUBLIC WEAL.*

BY J. B. MATTISON, M.D.,
OF BROOKLYN;
MEDICAL DIRECTOR, BROOKLYN HOME FOR NARCOTIC INEBRIATES.

TWENTY-SIX years ago, in a paper, "The Impending Danger," *Medical Record,* 1876, attention was called to a situation that seemed to me ominous—weighted with peril to the public weal—in that the use of morphine had become so general that it involved the risk of this nation becoming largely one of opium inebriates. A decade later, an added risk obtained in the coming of cocaine—a drug wonderfully rich in its power for good, in some conditions, when rightly used; but with a destructive energy all its own—one unique and appalling, that may well be called diabolic, and with which no other agent for ill, save one, can compare.

During the twenty years following the publication of that paper, the high-water mark of this narcotic abuse, so fraught with danger, was reached—in my opinion—and since then there has been a steady decrease in the use of these drugs among medical men, so that a present survey makes me largely optimistic, and hopeful that in the near future, we shall note still larger decline. Why this faith within me need not detain us now. Despite adverse thinking of some, reasons good and sufficient make me think narcotic inebriety in America on the wane, and that we have come out of a condition that was critical as to the public good, because it threatened an untold number with more of sorrow—mind and body—than the world would ever know.

But while felicitating ourselves on escape from that peril, there is still cause for concern in that we are menaced by a danger, less open—but none the less real—because its fell work is done by those with whom private gain is above public good, and among those who, quite unaware of the risk lurking in these so-called, but often specious, helps to good health, find themselves, early or late, in the grip of a poisonous power they are helpless to resist.

The drift of my paper you, at once, appreciate. It is solely toward the danger involved in the lawless sale—lawless because not safe-guarded by law—of the many nostrums in which morphine and cocaine play the largest part for harm. As a nation largely neurotic—both ancestral and acquired—we offer an inviting field to venders of such wares, who ply their trade with a vigor worthy a better cause, and with result of which we must make note if we would conserve the best interest of many whose well-being is given to our care. It goes without saying that the larger, by far, number of the many nostrums—nervines, anti-neuralgic pills, powders, tablets and liquids—so much heralded and lauded for relief of pain and nervous unrest, have morphine as their active part. And this "part," in some is not small. In one, largely advertised, there is one-eighth gr. in each teaspoonful. The risk of morphinism, in certain persons, from that amount, is large; in fact, a smaller, in a highly nervous patient, on whom it acts kindly, will create the disease. A ten years' case of morphinism, under my care, seven years ago, had its rise in a one-sixteenth gr. daily dose.

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* Read before the American Association for the Cure of Inebriety, Boston, Dec. 18, 1902.

Even larger risk of inebriety obtains in using the various nostrums containing cocaine, so much lauded for the relief of coryza and other nasal ills. In the form of catarrh snuffs and solutions, its power for harm is far greater than when taken by mouth; in fact it ranks almost—or quite—with its subdermic effect, by virtue of the highly absorptive nasal mucous membrane, and its nearness to the brain, making its seductive power and ill effect on mental health specially prompt and pernicious. One of these nostrums contains 1⅞ per cent. cocaine—two per cent. is the strength often used for anesthesia—and any "cure" having that amount is dangerous. *Insanity is certain, if its use be continued.*

Case after case of cocainism, the genesis of which was its use by a rhinologist, has been under my care. One of the most notable—and quite unique—was during the last summer; a New England physician, who, three years ago, used it for acute coryza. It snared him, and he continued it, changing from nose to mouth, never swallowing, but holding till he felt its effect, and taking it, hourly, to extent of 24 grs. daily, till demented. The wrecks sequeling this and the more common subdermic using—the latter, mainly, among our own confrères, but now, happily, on the wane—make a sad chapter in the gruesome story of narcotic abuse during the last 15 years.

Such the situation. What the need? This:

An act, making it illegal to sell morphine or cocaine except per prescription, and the prescription not to be refilled, save by order of attending physician.

A law compelling the maker of every nostrum to print the formula on wrapper, and those containing morphine or cocaine, the amount of the drug in each dose. America is behind the times as to what could and should be done to avert this ill. The American Association for the Cure of Inebriety can, and, it is to be hoped, will, make earnest effort along this line, and so, effectively safeguard one phase of the public weal.

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**Canadian Doctors Cannot Practise in South Africa.**—Three Canadian doctors, two from Ontario and one from McGill, who went to South Africa with the Canadian army medical corps, tried at the conclusion of the war to practise in the Transvaal colony. As only English diplomas were allowed there, they were prohibited from continuing, and even on appeal to Lord Milner, without success.

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## THE RESULTS OF INTRAVENOUS INJECTIONS OF DILUTE FORMALIN SOLUTION IN SEPTICEMIC RABBITS.*

BY WM. H. PARK, M.D., AND WM. A. PAYNE, M.D.,
OF NEW YORK.

This work was undertaken at the Research Laboratory, Department of Health, after the report by Dr. Barrows of a case of streptococcus septicemia in which recovery had followed the injection of formalin solution. In all of our experiments, first the culture, then afterward the formalin solution were injected intravenously. Healthy unused rabbits were employed; and controls were always made. In order to roughly determine the effect of intravenous injections of formalin in rabbits, we injected a number of rabbits with varying dilutions and amounts. We found one c.c. of pure formalin to be immediately fatal; five c.c. of a one-tenth solution to produce alarming convulsions, later anemia, paralysis and death; ten c.c. of a one one-hundredth dilution to produce slight temporary disturbances with following anemia. Ten c.c., twenty c.c., thirty c.c., and fifty c.c. of a one five-thousandth solution produced no apparent immediate disturbance, but one hundred c.c. caused abortion in a pregnant rabbit a few hours afterward. This may have been due, not to the formaldehyde, but to the large amount of fluid injected. One rabbit died during the inoculation of fifty c.c. of this same dilution. As far as immediate danger is concerned, ten c.c. of a one one-hundredth dilution seems to be within the bounds of safety for a full-grown rabbit. Ten c.c. of a one two-hundredth dilution given a young rabbit was followed by a pronounced edema of both ears. Rabbits receiving large amounts of formalin showed after two to three weeks emaciation and pronounced anemia.

The quantity of formalin which could safely be given having been determined we injected a number of rabbits intravenously with from one to ten c.c. of an ascitic broth culture of two strains of slightly virulent streptococci recently obtained from human blood, an amount sufficient to kill probably in from one to four days. Of each set of rabbits a certain proportion after inoculation received intravenous injection of formalin solutin. About half of the rabbits injected are presented on the following table. The results in the others were similar. One rabbit which received one hundred c.c. of a one five-thousandth solution of formalin, twenty-four hours before the streptococcus, lived considerably longer than the controls.

The slight virulence of the streptococci in the above series of experiments hampered us in deducting conclusions as to the amount of protection which would be afforded in case fewer but more virulent streptococci had been employed; but these experiments certainly demonstrate that after even large doses of formalin the streptococci can still increase in the blood and cause death through septicemia. All the rabbits receiving formalin after the streptococcus died before those receiving the streptococcus alone. In the other table we show another series of rabbits which were injected with a virulent culture of pneumococcus sent to us by Dr. Wadsworth. Here, as before, with the streptococci, the formalin failed to give the least protection. Table II gives the results in eight rabbits, four of which received the formalin dilutions after the pneumococci.

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* Read before the New York Pathological Society, Feb. 11, 1903.

*Table I.*—Showing results of intravenous injection of dilute formalin solution in rabbits, one to two hours after infection with streptococci from cultures A and B.

| RABBIT EXPERIMENT NUMBER | AMOUNT OF CULTURE INJECTED | AMOUNT OF FORMALIN INJECTED | DURATION OF LIFE | SMEARS AND CULTURES AT DEATH SHOWED IN BLOOD |
|---|---|---|---|---|
| 1 | 10 c. c. A | 50 c. c. 1-5,000 sol. | 18 hours | Abundant streptococci |
| 1 | 10 c. c. A | Control; no formalin | 22 hours | Abundant streptococci |
| 1 | 10 c. c. A | Control; no formalin | 24 hours | Abundant streptococci |
| 2 | 10 c. c. B | 10 c. c., 1-200 sol. | 6 days | Abundant streptococci |
| 2 | 10 c. c. B | 10 c. c. normal salt solution | 15 days | Abundant streptococci |
| 2 | 10 c. c. B | Control | 10 days | Abundant streptococci |

*Table II.*—Showing results of intravenous injections of formalin solution in rabbits within one hour after the injection of a surely fatal dose of a virulent pneumococcus. A got pneumococci alone; B got pneumococci and later formalin solution.

| RABBIT EXPERIMENT AND AMOUNT OF CULTURE USED | | AMOUNT AND DILUTION OF FORMALIN USED | TIME OF FORM. INJ. | DURATION OF LIFE | |
|---|---|---|---|---|---|
| 1 | 1 c. c. | None | | 1 day | Smears and cultures at death showed in blood abundant pneumococci. |
| 1 | 1 c. c. | 5 c. c., 1-100 | 1 hour after | 1 day | |
| 2 | 5 c. c. | None* | | 3 days | |
| 2 | 5 c. c. | 5 c. c., 1-100 | Immediate | 2 days | |
| 3 | 5 c. c. | None | | 4 days | |
| 3 | 5 c. c. | 15 c. c., 1-100 | 1 hour after | 2 days | |
| 4 | 1 c. c. | None | | 3 days | |
| 4 | 1 c. c. | 10 c. c., 1-1000 | 30 mins. after | 2 days | |

* Received 5 c. c. of normal salt solution.

From the tables it is seen that the injections of formalin were given in some cases equal to and in others far beyond the comparable dose advised by Barrows in man, and yet these rabbits died uniformly before the controls. Although these experiments are limited in number, yet they are so uniform in their outcome, that it seems fair to assume that non-lethal formalin injections cannot stop a septicemia already started in healthy animals. The results of Fortesque and Bricksdale, published just as we were finishing these tests, agree in every point with ours. They used anthrax bacilli and streptococci. (*Lancet,* January 10, 1903).

During these experiments streptococci have been obtained, either by Dr. Wilson or Dr. Poor, from the blood of four cases of streptococcus septicemia in man. Each of these cases received two or more intravenous injections of from 500 to 750 c.c. of a one five-thousandth solution of formalin. Streptococci were found in the blood of two of the cases the day after the formalin injection. In the other two cases no cultures were made. All four died. Their deaths took place in from five days to three weeks after the injection of formalin solution. In the blood of these cases the streptococci were present to the extent of 4 to 25 per c.c. and were thereafter probably more abundant than in the Barrows case where, according to the report from the Cornell Laboratory, a growth of streptococci occurred in only one of the three lots of broth inoculated with the patient's blood.

The experiments reported here and elsewhere, and the fatal outcome of septicemia in man after diluted formalin injections should cause us to be guarded in using formalin, and make it necessary to weigh each case injected not only to determine when improvement ensues whether recovery has been promoted, but also when death occurs as to whether harm has been done. An intravenous injection of water plus sodium chloride may prove better than water plus formalin.

## EXPERT EVIDENCE: A REPLY TO HON. JOHN WOODWARD.*

BY WILLIAM LEE HOWARD, M.D.,

OF BALTIMORE, MD.

JUSTICE WOODWARD'S criticism of expert testimony,* his statement: "So notorious is it (the abuse of expert testimony) becoming that, if it is not checked, it seems to me a reaction must inevitably come that will abolish such testimony altogether," contains so much truth from the legal side, and so few facts from the medical side, that it calls for a reply from the physician.

The low estimate in which the medical expert is held, the disrepute into which he has fallen, and the seemingly commercial basis on which he is placed, is partly due to the members of the Bar. My profession is by no means guiltless of assistance in bringing about this deplorable state, but has, by its indifference, or through its lack of a national educational standard, allowed individuals to pose in courts as representatives of progressive medicine, when in reality, many have been those who seek the notoriety and emoluments accompanying such temporary false standing. But as I shall show further on, the legal profession can do much to rectify the present status of the medical expert, and look to it that honorable men are treated honorably. When this occurs experts can be found who will be respected and believed, justice aided, and forensic medicine again takes its place as one of the highest offices for the protection of honor and life. Let the lawyer once understand that medical men do not always recognize the maxim: "*Justitia non novit patrem, nec matrem, solum veritatem spectat justitia,*" and that the reputable physician cannot at all times and under all circumstances subscribe to the legal principle: "*Lex non fovet votis delicatorum,*" and he will gain an insight to the reason for the difference between the working of the medical and legal mind.

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* Expert Evidence, by Hon. John Woodward, Justice of the Appellate Division of the Supreme Court of New York.—North American Review, October, 1902.

There is a feeling among medical men that the legal mind is not always in sympathy with the fine and delicate problems presented to the physician in the sick chamber and on the witness stand. The lawyer often demands facts which the medical man considers sacred secrets, and it is frequently the bullyragging—which unfortunately in some cases the Bench allows—that the medical witness is subjected to, that makes him an unsatisfactory and unwilling witness. He is often accused of witholding evidence and clogging the wheels of justice, when in fact, he is endeavoring to be faithful to his trusts—his patients. In ethical matters the physician and lawyer speak two languages.

In some respects the legal opinions governing the practice of medicine in the United States do not differ from those of the time of Henry VIII, for up to that period the common law of England did not recognize the inability of the public to discriminate between the qualified and unqualified practitioner of medicine. Practically this is true of the United States so far as allowing a jury composed of men of varied education and diverse environmental conditions to pass upon the statements of opinion of the medical expert. That is, these twelve men of dubious scientific knowledge are to judge between the value of the opinions of a man whose alma mater is a public school and whose diploma as a doctor of medicine was granted after a two years' course of seven months each, and that of a man who has spent a life of study and preparation in school, at college, and the university. Legally—thanks to the bewildering statutory laws—both have an equal standing in court and each may hold the impressive title of professor. A recognized national standard of medical education and a Minister of Medicine in the Presidential cabinet are absolutely necessary in order to clear up this chaotic condition. "In the United States the legislation of each state has authority to prescribe qualifications which must be possessed by those practising medicine and surgery within its borders and it may be said without exception that the legislation of each state has exercised this right to a more or less degree."—*Taylor.*

There is at present great effort being made by medical men to force a standard for medical education, and considerable progress has been made along this line, although there still exists a tendency among a certain class of medical colleges to evade this standard by resort to technical methods and tricks known to the unscrupulous. It is unnecessary here to bore the reader with the worn out platitudes of the honesty of both professions, but we must face facts which are well recognized by physicians, although seldom given publicity through fear of offending the innocent.

Prof. R. A. Witthaus justly declares that one of the reasons expert witnesses are in bad repute, is: "The employment of blatant, ignorant persons, or even persons who do not hesitate at plain perjury." Such will always be the case until the unscrupulous and uneducated men are driven out of the profession. This can only be accomplished by having a national standard of education. This standard must be high. The candidate for the medical college must be one who has mentally and morally been tested by years of preparatory study—not a two years' course, and then receive a baccalaureate degree. This is the only remedy on the medical side for the disgraceful status of the medical witness to-day, a condition which indirectly is a stigma on the profession of medicine.

The American Medical Association is constantly endeavoring to bring about a satisfactory standard of medical education, forcing those medical schools which have no excuse for existence save a commercial one, to adopt a standard of education for entrance, and to make compulsory a four years' course. Progress has been made along this line, and the last five years have shown a marked improvement in the education and personnel of the medical student. It is often forgotten by the average juror that the moral make-up of the expert has as much to do with the value of his testimony as his technical knowledge, and it is this mental attitude of the juror that has thrown a pall of distrust around all medical experts, and which has made it difficult to get men of honor and self respect to go on the witness stand; many of the large hospitals and real universities having an unwritten law to the effect that physicians connected with the same shall not be employed by lawyers seeking medical testimony in damage cases. This state of affairs is caused by the number of unscrupulous lawyers—ambulance chasing solicitors—that swarm around the courts of every city like struggling gnats. It is the purely commercial spirit that governs these shysters which makes them a menace to justice, a drag on the legitimate business of the courts, and is certain to cast a ray of suspicion upon the physicians they employ as experts. If the courts do not take cognizance of these persons, the physician will. Already too many have suffered innocently from these legal parasites.

In many States the candidate for the practice of medicine must exhibit a diploma from a recognized college having a three years' or four years' course before he can be licensed by a State board of examiners. In some States he is not required to have a diploma from a medical college, but only to pass an examination by a State board. "In some States it is provided that he shall never have been convicted of a felony."—*Taylor*. It has been decided—People *vs.* Rice—that an unlicensed physician may testify as a medical expert, yet the laws of the State of New York make it a misdemeanor to practice without a license. The New York Court of Appeals in passing upon the question of the non-licensed expert, used the following language, Chief Judge Alton B. Parker writing the opinions: "After a careful consideration of the subject we have reached the conclusion, that if a man be in reality an expert upon any given subject belonging to the domain of medicine, his opinion may be received by the Court, although he has not a license to practise medicine." Justice Woodward in his article has this to say: "An expert is a specialist, the value of whose evidence given in the form of opinion, is proportioned to his character, to his reputation for honesty in the community, and to his standing in his specialty or profession."—Page 488.

According to the legal citations above, an osteopath with a large following could give satisfactory evidence of having all the qualifications demanded by Judge Alton B. Parker, while a "natural bone setter" without legal authority to practice medicine, possesses all the knowledge necessary to contradict the opinions of an honorable professor of anatomy in one of our large universities, and furthermore, there can be found members of the Bar who will gleefully assert this fact in court. Again, thousands of men and women can be found who will claim that Mrs. Eddy's knowledge of diseases places her as an expert far above any regular physician, and that she more than fulfils Justice Woodward's demands in her "reputation for honesty in the community" and to her "standing in" her "specialty or profession."

It would be surplusage to parallel further, but it is on account of this uncertainty of the company the regular physician will be pitted against, that frequently causes him to avoid giving his valuable opinion in court. Nor is it entirely due to the admittance of the irregular practitioner in court, but frequently to the opposing side who have hired a "professor" whose reputation cannot be openly assailed, yet whose unsavory odor has penetrated the sensitive ethical rules of the medical society. This man is a professor in a medical college, has a legal right to be called an expert, will have a large following, and by the public will be placed on the same educational standard as the reputable man. But there is a great gulf between them, they can seldom meet on the same scientific ground. The man who has gone from school to college, from college to university and from university to the hospital, is, thanks to our lenient, and often farcical statutory laws, discourteously contradicted on the witness stand by a man who has jumped from the soda water counter to a two years' course in an easy-going medical school. Such are a few of the conditions which have driven honest physicians from the courtroom. There are others—the fault of the Bench and Bar—the impertinent questions, discourtesy, and the misleading and senseless hypothetical questions emanating from a certain class of lawyers.

It is the long and tangled hypothetical question put to the expert witness that displays the misunderstanding of the lawyers and apparently makes a fool of the doctor. Questions are asked to make the unexplainable explainable, while the jury is not told that the physician deals with conditions that are continually furnishing exceptions to general rules. If the doctor on the stand tries to explain this fact he is told to stop, and confine his statements to his opinions based on the hypothetical question. Says the Hon. Wm. B. Hornblower: "Expert testimony based upon one-sided hypothetical questions is almost of necessity favorable to the questioner, and the seeming inconsistency of expert witnesses of equal ability is largely due to this mode of questioning." The jury and the press do not consider that physicians of equal intelligence and education may as honestly differ upon one or more series of questions put to them by a layman, as may the opposing attorneys in an interpretation of a proposition in law. The medical man now realizes his anomalous position as a witness, the false attitude he is placed in, and the impossibility of being allowed to tell the truth as he understands it. Opinion witnesses receive unfair treatment from lawyers who take cases not for the truth that is in them but for the lies that can be put into them. The physician knows it would be possible to establish a reasonable degree of truth were not everything done to prevent it. The expert realizes that he is permitted to know only one side of the question as it affects the interest of the parties who call him. Let him have without reserve the facts from both sides. Give him an opportunity to consult with the expert for the other side, then even if they disagree in opinion they will most surely agree on facts. But to this mutual consultation lawyers will not agree. They will not, especially in damage cases, place in the possession of opposing counsel any information which they may wish to use for their own side. This may be ethical from the legal viewpoint, but to the doctor it looks like injustice. Physicians are not in the habit of looking on one side only in their investigations and studies, hence this attitude of the lawyers has driven conscientious men away from the courts. It is essential that an expert witness should be made as familiar with all the facts appertaining to a case in which he is to testify, as that the attorneys should know the whole of their case before trial. "The element of judgment and opinion must be based upon the same facts as those of the lawyer, and upon these our interpretations must rest."—*W. P. Giddings, M.D.*

McKelway tritely says: "It is the lawyers who have brought expert testimony into disrepute, and who to a degree have brought their own profession into disrepute by the arts which they have practised for the concealment or destruction of truth rather than for its disclosures and denotement."—*Albany Med. Annals,* Oct., 1898.

When the physician has clearly in his mind the case as he views it, has formulated his opinions as based upon facts, and would give them to the jury regardless of the consequences to the side employing him, he is partially gagged by the surprised lawyer who only wants such opinions as will win his case—not the truth. The only logical method for the medical witness is to state in sequence his conclusions, the reasons for them and the conditions which might change or modify them, but he is not allowed to so proceed; and, humiliated, with the feeling of loss of self-respect, and conscious of having been placed in a false light, he leaves the stand swearing never to be used again as an expert. He seldom is, for when the lawyer trumps up another damage case he looks around for a more pliable tool whose opinion will coincide with his own. And this is the way he will proceed: He goes from physician to physician, giving his side of the case, insinuating in manner, and elastic with facts. He pays the fee for consultation—sometimes, and as each physician retains the secret of the consulting room the lawyer consults many with impunity until he finds one whose opinion can be readily molded into the attorney's shape. Now we see the medical expert made to order. These are facts well known to men of both professions. Mather wrote: "The expert witness is not called to tell what he knows, but what he thinks." In truth he is not wanted to-day for what he thinks, but to tell what he thinks his employer thinks.

A litttle attention on the part of the legal profession would disbar this unscrupulous lawyer who makes flattering offers, insinuating pleas and indirect bribes to his medical fellow in perjury. Let the legal profession get rid of the Bar bullies and shysters and the medical profession will have fewer scamps. The Supreme Bench has here work to do. Are maintenance, barratry and champerty no longer punishable?

In quoting Jones,* Justice Woodward tells a tale only too well known to the public: "The notorious fact that experts of equal credibility and skill are found, in almost every cause, testifying to directly opposite conclusions, illustrates both the fallibility of such testimony and the fact that a conviction for perjury based upon such evidence would be very difficult." It is the training the legal mind receives along the line of precedents, of relying upon facts established in passed decades, of reference to aged decisions and immovable tradition, and of reference to ancient rules of procedure, that causes the lawyer to denounce as unreliable one or all of the experts who differ radically in their opinions, and who seem, to the lay observer, to give each other the lie direct. Because two medical men of rigidly honest intentions contradict each other in the answers to some hypothetical question put to them on examination, does not convey any idea of perjury or dishonesty to the scientist.

In no branch of the sciences has there been such rapid progress as in that of medicine the last ten years. Hourly, daily, new theories are replacing the old, and what was thought the truth yesterday, is to-day sworn to be a fallacy. Statements are made daily in medical societies which have their confident supporters and likewise their bold deniers. The new ideas are discussed pro and con with honest intentions and faithful adherence, yet there is no display of acrimony, never an idea that your opponent is a liar. When a member of the Bar wishes to consult some legal authority he refers to an ancient tome that his father, or perhaps his grandfather, was accustomed to quote. Let a medical man refer to a work that has been five years on his shelf, or let him rely on his text-books of student days, and he will without doubt be flatly contradicted by a wiser man when the two meet in court. Both will be equally honest and sincere in their statements, but the wiser man can give facts regarding recent discoveries which will cast doubt in the minds of the jury upon the statements of his confrère. This is one of the reasons why medical men do not believe experts have any place in trial by jury. Again, regarding a medical question, two men may give greatly divergent opinions, and both be giving their honest opinions. There is at present so much uncertainty in certain branches of medicine, especially in psychological physiology, that it is a bold man who undertakes to nail down his fact so it cannot be displaced. In referring to a statement of a physician that it would be an easy matter to get half a dozen competent medical men who, in answer to a hypothetical question put by the District Attorney, would give quite exactly opposite answers, Justice Woodward remarks: "Is not the remedy for these frequent, and after all infrequent, instances of professional dishonor in the hands of the medical profession itself?" No; it is in the hands of the legal profession, some of whose members keep a morally weak physician on a retaining fee, or, more often share with him the small sums they can obtain by verdicts in damage cases; or by unscrupulous "bluffing" where there is no case. It is the lawyer in these cases who is the suborner, the physician the flaccid tool and perjurer. Is a suborner any less guilty than the perjurer? Justice Woodward would have the latter expelled from the medical society,— a very difficult matter, as is well known by those familiar with medical cliques and the humiliating jealousy therein existing—but would it not behoove the Bench and Bar to pluck out its own beam? In all large cities the number of lawyers who throw tempting bait to the struggling young physician is steadily increasing, and it is safe to say that once in the hands of these legal pirates the physician is lost to all sense of self-assertion. So notorious have these legal parasites become that the Baltimore *Evening*

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* "The Law of Evidence in Civil Cases," by Burr W. Jones.

*News* has been editorially stimulated to make the following remarks:

"Ambulance-chasing" lawyers and their side partners, the "runners," are becoming more numerous every day in Baltimore. Frequently now dim hints at their methods are made in court. Vexatious damage suits are being promoted in Baltimore to an extent never known before. It is a growing abuse of great proportions, in which the taxpayers are interested directly.

"All of Baltimore law-courts are behind with their work. This is largely due to the pernicious activity of the damage-suit lawyers. At least one-half of the suits that go to the trial dockets of the law-courts are damage suits for alleged injuries to persons or property. It is probable that an investigation would show that four-fifths of the docketed suits which ultimately call for trial are of this sort. The majority of such suits are worked up by "ambulance-chasing" lawyers and "runners," and have very slight foundation. Yet this pressure of frivolous litigation will very soon make necessary an additional judge, with bailiffs, clerks, deputy sheriffs, jurors and all the paraphernalia of a court. It costs about $60 a day to conduct a court with a jury, and the public will have the pleasure of paying that additional amount to aid "ambulance-chasing" lawyers in "plugging" corporations and individuals. That is about what it amounts to. In the meantime, legitimate litigation will have to wait."

I have briefly outlined some of the salient points or difference between the medical and legal methods of thinking, and the difficulties which present themselves whenever an attempt is made to settle the much-discussed "Medical Expert Testimony" question. From the medical viewpoint there seems to be no reason why the experts of both sides could not have a conference before the trial in order that they might come to some mutual understanding, or formulate a joint opinion. Such a procedure would further the ends of justice and save expense to the State. Another plan which seems feasible would be to have the expert an officer of the court, similiar to a court surveyor as exists in some States. Maine has a court surveyor to give evidence in cases of disputed land boundaries. When no agreement as to facts has been reached, the Court, upon request, selects a court surveyor, who when asked, goes over the disputed boundaries, and identifies marks and bounds, and makes his official report. Whichever side asks for his appointment pays the expense. But to any such procedure of saving time and expense; of any method which will hasten the ends of justice and put a stop to disgraceful bickerings and disputes, the legal cry of "unconstitutional," "jeopardizes the rights of the defendant," "impossible under our rules of procedure" and other stereotyped expressions arise which makes the medical man wonder at the immovability of the law's progressiveness. Until the legal profession allows us certain concessions, until it modifies the rules of the admissibility of evidence in criminal procedure, so that the expert witness may have the protection which rightly belongs to him, there will always be difficulty in getting medical men of probity and honor to dignify the witness stand with their presence at criminal trials.

## MEDICAL PROGRESS.

### MEDICINE.

**Human and Bovine Tuberculosis.**—This knotty problem is attacked once more by Nathan Raw (Brit. Med. Jour., Jan. 31, 1903), in a preliminary communication which recounts his experiments and presents the following conclusions: (1) That there are two distinct varieties of tuberculosis affecting the human body, one produced by human tubercle, the other by bovine; (2) that these two forms are separate and distinct; (3) that bovine tuberculosis may set up *Tabes mesenterica* in children; (4) that bovine tuberculosis is probably the cause of enlarged lymph glands, tuberculous joints and lupus; (5) that pulmonary tuberculosis is not due to bovine infection but to human.

**The Etiology of Acute Rheumatism.**—Many hypotheses have been advanced to explain this and other closely allied joint conditions, but the present state of our knowledge is summed up by the conclusion that a small micrococcus, absolutely distinct from that of ordinary septicemia, is the cause of this well-known train of symptoms. R. M. Beaton and E. W. A. Walker (Brit. Med. Jour., Jan. 31, 1903) believe that the coccus which they have isolated from rheumatic cases, is identical with that obtained by Triboulet, Wassermann, Paine, Poynton, and others. The slight variations in the descriptions given by these observers are probably due to variations in technic. The organism is a tiny micrococcus arranged in pairs and short chains. It is not decolorized by Gram's method. It stains well with all the ordinary dyes. It is not capsulated. It does not agglutinate. When this diplococcus is injected into an animal, characteristic and positive results are to be expected. There is fever, wasting, mono-arthritis, polyarthritis, paresis of limbs, pericarditis, endocarditis, septicemia and death. Some rabbits have two or three attacks of acute arthritis following successive inoculation and in one case, now doing well, the disorder was successfully induced four times. If an excessive dose be given, death occurs within 48 hours, the post mortem usually revealing a large pericardial effusion, often pleural effusion and cardiac engorgement with vegetations upon the mitral and tricuspid segments. The joints are very hyperemic and may contain a clear effusion. The organism is found in pure culture in the blood in all the exudations and in the urine. In moderately large doses death may occur in from three to seven days or as late as three weeks. The autopsy shows the effusions to have become turbid or purulent. Small doses produce conditions in animals which are closely identical with what is usually known as acute rheumatism in man. The heart lesions, however, can rarely be made permanent, as occasionally happens in us. Nor have the observers seen a true chorea result even in the case of young animals. Their conclusions seem positively to indicate that the bacterial specificity of acute rheumatism has been positively established.

**Persistent Jaundice.**—A most remarkable case in which a general icterus has been present for fifty years. is reported by W. T. Cocking (Quart. Med. Jour., Yorkshire, Feb., 1903). The patient stated that she had been afflicted until the present since three weeks old and at various times has had attacks of "biliary colic" when the jaundice would get worse. The cause of the condition was not obvious, but the symptoms and physical signs pointed to partial obstruction of the common duct possibly congenital. The latter, however, is usually fatal in a few weeks. Operation for exploration was refused.

**Complications Attending Use of Antitoxin.**—That peculiar idiosyncrasy toward diphtheria antitoxin may be manifested by certain patients is shown by the report of a case by A. Reckles (Quart. Med. Jour., Yorkshire, Feb., 1903). He gave 4,000 units of antitoxin to a woman suffering from diphtheria of the throat. A few days later convalescence was established but a severe urticaria set in. A sudden attack of dyspnea, with lividity and pain around the heart then came on and suggested angina pectoris. This, however, could be ruled out and it seemed that the serum was at fault. In the next few days, nine successive attacks occurred and then recovery was uneventful. It was later found out that two years previously she had been given antitoxin for diphtheria and similar symptoms of dyspnea and lividity were noted.

**Hepatoptosis.**—The errors in diagnosing obscure abdominal tumors will never be fully known, remarks Irving Miller (Amer. Jour. of Obstet., Feb., 1903), inasmuch as the surgeon always falls back on the exploratory incision to supplement his deficiency in diagnostic technic, and seldom looks the least bit perturbed, however far from the true condition he may have been. The following case will show how easily the diagnosis may escape one. Examination showed a tumor in the right flank easily moved to the median line, and down in the iliac fossa on the right side. The edge of the hand is easily insinuated between the tumor and the ribs neither does the mass rise with inspiration. The tumor is convex and was thought to possess a decided kidney shape, though large. There was no sharp border to be felt.. Later the kidney was made out. A later examination showed the mass to be globular and not so mobile as at the first examination. Tumor of the gall-bladder was now thought of and an exploratory incision was decided upon. Examination of the mass after the abdomen was opened showed it to be the liver and that, not at all enlarged. Diagnosis, floating liver.

**Malarial Vertigo.**—Although this symptom may be markedly accentuated, it has, according to T. J. Mays (Jour. Am. Med. Assoc., Feb. 7, 1903), been noticed by few recent writers. From a study of his own cases the author has often found that in apparent good health intermittent daily attacks appear, marked by dizziness and unsteady gait. Persistent headaches and backaches are present, together with depression of spirits and exhaustion. In all cases there was a well-defined history of intermittent fever, which may have been latent for some time. Best treatment is quinine in doses, sufficient to produce ringing in the ears. May be combined with strychnine, blue mass and capsicum.

**Mortality in Pertussis.**—The commonly accepted opinion as to the fatality of whooping-cough is erroneous, but the dangerous character of the disease, especially among infants, is becoming better recognized. M. H. Hull (Phil. Med. Jour., Feb. 7, 1903) reports five fatal cases in an epidemic at an orphanage in Atlanta, Ga., and collected 55 cases in a period of two years which ended fatally. In the author's cases, the complications which only existed in some, were not the primary cause of death. The danger signal, particularly in young infants, was either a developing stupor or an attack of prostration from which they recovered temporarily, to go into a state of increasing stupor and exhaustion until death. In studying the larger series of fatal cases it was found that a catarrhal affection of the mucous membrane is the most probable complication and liable to prove the most fatal by lowering the resistance of the body to the toxic effects of the infection. Average age of the fatal cases was less than one year and duration three weeks. Most of the deaths occurred between April and September. As to the etiology, the author thinks that the characteristic lesion is a bronchial catarrh, caused by the specific micro-organism, the toxin of which acts principally on the nerve centers. The treatment comprises (1) support of the patient by tonics and stimulants, by plenty of fresh air and good food; (2) the establishment of an equilibrium in the nerve centers, also by tonics, iron and quinine, and by nerve sedatives; (3) prevention of the further absorption of toxins by destroying the micro-organism producing them—probably best done by antiseptic sprays.

**Postimpetiginous Nephritis in Infants.**—Five cases of nephritis occurring in children, in which the kidney lesion seemed to be directly traceable to the skin affection, are reported by A. Filia (Policlin., Feb. 14, 1903). In the author's belief, the eczematous lesion opened the way for the transmission of infection through the lymphatics, thence into the general circulation and to the kidneys. That this was so seemed probable from the fact that the same organisms (staphylococci and streptococci) found in the diseased skin, were also present in the urine; and these persisted some time after albumin and casts were no longer present. It was shown, through injections into animals of cultures of staphylococci found in such urine, that the organisms had acquired a high degree of virulence compared to staphylococcic cultures from other sources. This is in accord with the experimental experience that the addition of urine to ordinary culture media increases the pathogenic power of organisms so cultivated. Examination of the blood of the animals which had received the injections, showed staphylococcic septicemia in twenty-four cases out of thirty-three.

**Prognosis in Tuberculosis.**—The prognostic value of tubercle bacilli in septum as manifested in quantitative changes is commented on by L. Brown (Jour. Am. Med. Assoc., Feb. 21, 1903). He has examined a large number of cases at the Adirondack Sanitarium. In 169 cases with tubercle bacilli, 42 per cent. had lost their bacilli on discharge,—of the incipient cases 75 per cent. were apparently cured and of the advanced, only 19 per cent. This shows the better prognosis for the early cases. Other observations also prove that one specimen proves little or nothing in regard to prognosis. If the number of bacilli steadily decrease in a series of examinations at intervals sufficiently long, the patient may be improving, but the constitutional symptoms and local signs give much more accurate information. If on repeated examinations large quantities of tubercle bacilli are found, the disease has probably advanced to cavitation. Repeated observations seem to show that the morphology of the tubercle bacilli affords little or no ground for prognosis, but the short bacilli are suggestive of a more active process. The arrangement in clumps is more apt to be found in the severer cases, but may occur in all.

**Blood Investigations in Syphilis.**—As a continuation of their researches on the iron contents of the blood in the early stages of syphilis, G. Lowenbach and M. Oppenheim (Deut. Arch. f. klin. Med., Vol. 75, Nos. 1 and 2) have lately published the results of their investigations of the same character in the later forms of the disease. Included are gummata and specific ulceration more particularly of the skin, bones and mucous membranes. They found a marked reduction from the normal in the quantities of both iron and hemoglobin, neither condition being influenced by therapeutic measures. The number of red and white cells varies within normal bounds. The authors were unable to verify the differential diagnosis of syphilis by the variations in hemoglobin after the administration of mercury as proposed by Justus.

**Blood Changes Due to Syphilis and Mercury.**—An extensive series of observations with especial reference to their diagnostic value has been made on the hemoglobin contents of the blood of syphilitics by J. Justus (Deut. Arch. f. klin. Med., Vol. 75, No. 1) Over 500 cases of all varieties are included, treated and untreated. He finds that untreated cases of syphilis show a diminution of hemoglobin which lasts a longer or shorter time, depending on the severity of the disease. A gradual increase then takes place as the signs of syphilis subside. If a therapeutic dose of mercury is introduced into the affected organism by injection or inunction, a relatively sudden decrease of the hemoglobin content is observed. (10° to 20° in the Gower's or Fleischl's hemoglobinometer.) This sinking may again be compensated for in the course of a few days, depending on the severity of the symptoms and the general condition of the patient. If the treatment is continued the hemoglobin may reach a higher point than before the former was inaugurated, and the point when no further decrease takes place marks the period when healing of the specific lesions begins. It is further claimed that the changes in hemoglobin values just noted are only to be found in the blood of florid syphilitic patients and have not been observed in health or in any other disease. The reaction can be also found when invasion of distant lymph glands takes place and in all varieties of the disease. It disappears when the syphilitic lesions disappear, but can again be demonstrated if any recurrence takes place. In using the test for diagnostic purposes, care must be taken to employ the proper dose of mercury, at least 3 grams of the officinal blue ointment for adults, by inunction. Administration by mouth is not effective, because of the gradual absorption. Observations should be made the morning after the inunction. Subcutaneous injection of mercury bichloride (0.05 gm.) should be followed by observation eight to nine hours later. The author prefers the Gower hemoglobinometer modified by Sahli. A diminution of five degrees or more in the latter instrument indicates the presence of a florid syphilis. In secondary and tertiary syphilis the same result obtains provided the specific lesions have not undergone involution. A negative result is not therefore diagnostic of the absence of the disease (at some previous time). The author finds, from a study of all cases where the test was properly applied, a positive result in from 70 to 80 per cent. of all doubtful cases.

## SURGERY.

**Resection of the Common Bile Duct.**—This operation, combined with hepaticoduodenostomy, is claimed by H. Kehr (Münch. med. Woch., Jan. 20, 1903) to be the first one recorded. The patient, a man of fifty-three years, presented an annular carcinoma of the common duct, which necessitated resection of almost its entire length. The gall-bladder had also to be removed and the hepatic duct was sutured to the duodenum a short distance from the stump of the common duct, which was simply tied off. A small bit of omentum was then sutured to the point of entrance of the anastomosis, the wound sewed up except for exit of small tampon. There was a slight discharge of bile for a time, but the patient made a good recovery. He discusses the clinical differences between carcinoma and stone of the common duct and believes that carcinoma is more frequent in men than in women, there is seldom colic and usually icterus begins very gradually, but becomes intense and regular. The stools are usually clay colored. The duration of the disease is usually about six months for cancer, whereas with stone it may extend over a long period, even up to twelve years. Chills and fever are rare in carcinoma, cachexia is marked, the gall-bladder is large and palpable (80 per cent.). Ascites is ordinarily present. The good results obtained lead the author to extend surgical intervention to include cancers of the common duct and to recommend operation in cases of chronic icterus which suggests an obstacle in the common duct or pancreas in hope that it may be a case of chronic pancreatitis.

**Treatment of Fracture.**—The following details of treatment of fracture are offered by Dr. Borchard (Z'blatt f. Chir., Jan. 31, 1903). Massage is begun on the day of injury. Then application of splints and immobilization of the broken ends in exact position after the disappearance of the swelling and from the beginning of callus formation up to the time of consolidation, which prevents the displacement of the bone fragments, excepting with great force. This lasts perhaps twenty-six days, and is followed by massage and gentle movement of the joints, until union is formed. Finally, voluntary movement is allowed. The aims are to prevent stiffness of the joints, atrophy of the muscles, and a late edema as soon as normal position is resumed.

**Needle Holders.**—The shops of instrument makers exhibit great numbers of needle holders, many of which are complicated and fall short of their purpose. Latterly several have been devised upon the principle of two V-shaped notches grasping the needle from opposite sides. Their form permits any size of needle within the ordinary range of surgical needles to be grasped, necessarily at one point of the holder. The following modification of Hegar's has just been brought out by G. Burckhart (Z'blatt f. Gyn., Feb. 7, 1903). It consists of a long and a short jaw. The long jaw makes up the tip of the instrument and is so cut that two surfaces at right angles to each other mark its inner aspect. One of these surfaces runs along the whole jaw, up to the base of the tip, where it is joined by a very short surface. Against this shorter surface the needle is held by the tip of the short jaw, which is ground off at an angle, thereby repeating the principle alluded to above, namely, of giving a V-shaped, variable notch, in which the needle is held, and permitting any size of needle within the ordinary range to be held within the same point of the instrument. So simple an arrangement will commend itself to most operators.

**Appendicitis in its Acutest Forms.**—The treatment of this disease is probably more important than the diagnosis, which has come to be so much a matter of general familiarity as no longer to be overlooked as ordinarily as formerly. J. A. Macdougall (Lancet, Feb. 21, 1903) says, as to treatment, that he holds opium to be undesirable, because it masks the guiding symptoms. When unavoidable, a suppository or laudanum by rectal injection is better than morphine subcutaneously. When evacuation of the bowels is necessary, and it often is, enemata are preferable to cathartics by mouth. The method of operation in these cases done early, that is, within the first forty-eight hours, is, as a rule, straightforward and simple. Simplicity and safety, he thinks, are gained by making the incision more close to the anterior superior spine of the ilium than is usually advised. It is possible to display a removed diseased appendix without any protrusion of the small intestine. He has, as a rule, greater trust in sponges and swabs than in irrigation, and in drainage tubes of large size, with gauze wicks than in gauze packing. The later treatment of bad cases is better managed with normal salt solution, used subcutaneously, both as a cardiac stimulant and as a means of overcoming the poisonous material within the system, by increasing its elimination through the skin and kidneys.

**Improvement of General Anesthesia.**—The improvement on the basis of Schleich's principles with special reference to anesthol is discussed in a most interesting paper by WILLY MEYER (Jour. Am. Med. Assoc., Feb. 28, 1903). The effort heretofore has been directed not only to the discovery of a new and less dangerous narcotic but also to improve the chemical conditions of the known anesthetics by making them absolutely pure. Schleich's investigations were conducted on an entirely different plan and he started to find an anesthetic of which the boiling point would correspond to the body temperature, substituting a physical for the chemical basis, so that the amount eliminated during expiration would almost equal that absorbed during the previous inspiration. He finally devised an apparently suitable mixture of ether, chloroform and petrolic ether (benzine). Meyer made a series of trials with this mixture, and although fairly good results were had, substituted finally for the petrolic ether, ethyl chloride and called the product anesthol. It contains ethyl chloride 17 per cent., chloroform 35.89 per cent. and of ether 47.10 per cent., representing a proportion of about 1:2:3. Its boiling point is 104°F. Meyer has used it in many cases for four years past and is very well satisfied with it. It should be given by the drop method with an Esmarch mask. The patients do not struggle, the pulse does not vary much, but respiration at times becomes shallow. The anesthesia caused is not very deep and some of the reflexes may not be lost. In abdominal cases, therefore, morphine, gr. $^1/_{12}$ to $\frac{1}{4}$, may be given by hypo about half an hour before operation with excellent results. Salivation and cyanosis are absent and the awakening is quick. Vomiting varies, but is never persistent. Other sequelæ are rarely met with. Two deaths are reported, both severe kidney operations and with marked shock, not especially due to the anesthetic.

**Actinomycosis in Man.**—The following are offered by R. VON BARACZ (Arch. f. klin. Chir., B. 68, H. 4): (1) Ray-fungus should be regarded as a special and peculiar fungus, and not as a collective name for a variety of bacteria which might be classed as rayform. (2) The ray-fungus passes into the human organism, not through the teeth, but through the mucous membrane of the digestive tract or of the respiratory apparatus. Occasionally its entrance is gained through the skin. (3) The vehicles of this fungus are, for the most part, foreign vegetable matter in a dried condition, chiefly various grains, fragments of grains, and the like, which have become infected with the spores of the fungus, and then find their way into the cavity of the digestive canal or are breathed into the lungs in their ordinary function. It is only exceptionally that these force their way through the skin into the organism. (4) Fungoid growths do not belong primarily to the actinoid processes of the ray-fungus. They belong, probably, to the degenerative forms of the same, and represent, as a rule, the later stages of the disease only, and occasionally the first stages of the disease when the conditions of growth are unusually favorable. Occasionally in actinomycotic gland there are found with the typical thin threads, very thick, thorn-like threads, which must be regarded as a development of the fungus itself or as a development of the same, and must not be looked upon as a specially foreign form of bacteria, for the reason that they have an alygous construction with the typical actinomycosis, and because they are closely related to these in a later development stage of the fungoid growth, and because the whole course of the sickness concurs with this theory. (5) The contagiousness of actinomycosis between man and man or man and animals, or the reverse, must be regarded as rather unlikely, especially as ray-fungi. which are obtained from man, seem to possess very little virility. (6) As a means of prophylaxis, contact must be avoided with the various dried and dust particles of vegetable matter, for example, fragments of straw, corn and the like, such as are found in the threshing of grain. (7) Actinomycosis in the regions of the face and neck may rarely cure itself. (8) Operative treatment of actinomycosis is limited to free incision and enucleation and antiseptic packing of the superficial, easily approachable masses. The most severe operations should, as a rule, be avoided. In the smaller foci of this disease, injection of tincture of iodine or similar antiseptics might be tried. (9) In actinomycosis of the lungs or of the internal organs, operations are exceedingly difficult, and should be limited to an intravenous injection or argentum colloidale Credé, combined with the use of Credé's ointment rubbed into the skin.

## OBSTETRICS AND GYNECOLOGY.

**Extra-uterine Pregnancy.**—During the last ten or fifteen years there has been so much discussion upon this subject that in about fifty per cent. of cases of extra-uterine pregnancy the true nature of the trouble is now recognized by the family physicians. H. J. BOLDT (Med. Rec., Jan. 10, 1903) reiterates the typical symptoms of this important and dangerous affliction. The non-appearance of menstruation at the expected time with the signs of pregnancy when a patient has previously been regular, followed in a few days to five weeks or more by the symptoms of partial or complete rupture. Usually only a week or less elapses after the expected menstrual flow before symptoms begin to manifest themselves. Pain in the lower abdomen most marked on the affected side is perhaps the first indication of trouble. It is usually severe and cramp-like in character, lasting an hour or so, and then subsiding for a few days or more. Following the attack of pain there is usually a flow of blood which is thought to be the menstrual flow, but is darker and more tarry than normal. The severity of symptoms depends upon the extent of the process, whether it is a tubal abortion or a partial or complete tubal rupture. In the latter case the pain is very intense, and the patient usually collapses as a result of the pain, and the large intraperitoneal hemorrhage. Bimanual examination will show the uterus somewhat enlarged, and its consistency relaxed. To either side of the organ, and sometimes behind it a mass will generally be felt, unless the rupture has been complete, and the blood is still free in the general peritoneal cavity, and even then there is usually a fulness in the cul-de-sac. The consistency of the blood-mass depends upon its age, the longer it exists, the more firm it will become. The passing of a decidua is not common. The pain may be no greater than sometimes is seen in dysmenorrhea, and as the bleeding may come at or about the same time as the normal menstruation, and even be normal in appearance, the diagnosis is frequently very difficult. In any doubtful case an examination should be insisted upon. In regard to treatment there are but two methods worth consideration, the conservative and the surgical. If a patient is seen who has a tubal abortion in progress, and from the examination it is evident that the blood is well formed into a clot, determined by its consistency, it may be permissible to watch and wait, provided she is amid surroundings which will permit of immediate surgical interference. She should then be carefully watched, on a fluid diet, with ice coil on abdomen and absolutely at rest, even if morphine is necessitated. In favorable cases the tumor will then become gradually smaller and more firm. Again, if the history and symptoms show that the patient has had a complete tubal abortion, objectively determined by the absence of an enlarged Fallopian tube, such as we would find if the embryo still remained in the tube, and if she has recovered from the shock thereof, a similar course is permissible. A hematocele will then form in the course of a few days to such an extent that it is readily recognized by the examining finger, and its further progress can be carefully watched. It is probably best to operate at once on all cases who have a progressive condition or who have not a well-defined hematocele. Abdominal section is rapidly made, the tube is found and caught by a clamp as soon as possible and the abdominal cavity cleared of the blood and clots. It is not necessary to remove all the fluid blood. Hot saline solution is freely added and the abdominal cavity filled with it before suturing. Infusion is frequently necessary.

**Conservative Surgery on the Adnexa.**—Realizing the many disadvantages that most women labor under after having undergone the recognized mutilating operations upon the genital organs, J. Kiriac (Gaz. de Gyn., Jan. 15, 1903) proposes a conservative operation that is believed to be entirely original. The operation not only frees the diseased organs from the unhealthy parts, but preserves either the ovary or tube in its totality. The ovary is freed from its adhesions, and brought out of the wound. It is then divided from end to end, as in treating a kidney. The two cut surfaces are then carefully examined. All cysts and diseased portions are removed. This operation is called by the author "scapsie," from the Greek "scapto," to sculpture or to hollow out. If the ovary alone is operated upon, it is "ooforoscapsie;" if the tube is in question, it is called "salpingoscapsie," and when both tube and ovary are operated upon, "salpingo-ooforo-scapsie," or more briefly, parartimato-scapsie. After having removed the diseased parts with a curved bistoury or a pair of scissors, the two fragments are brought together, that is to say, the organ is reconstructed. If there has been much tissue removed, two sets of sutures are necessary to hold the parts together; deep, retention layer, and a superficial layer. If in the case of an enormous destruction of either organ by abscess or cystic formation, the best procedure is to remove the whole organ, as there is nothing remaining to be preserved. This method of operating has given excellent success in six cases.

**Rupture of the Uterus with Recovery.**—This is so relatively rare a termination of a dread complication that it is worthy of record. Claude B. Pasley (Brit. Med. Jour., Jan. 17, 1903) records a case of a primipara, aged twenty-eight years, suffering from advanced aortic valvular disease. The presentation, as usual, was transverse and the pelvis slightly contracted. The condition was corrected to a vertex presentation, a binder applied and the patient left to continue her labor. Six hours later, it was found that the transverse position had recurred. The vaginal temperature was 103° F., and the waters had come away. The child was delivered by forceps two hours later, the patient's temperature having risen to 104½° F., pulse 140. The placenta was delivered ten minutes later, and the woman was so near death that no chloroform could be used during any part of the procedure. Strangely enough, without operative intervention, although the case was diagnosed as one of rupture, the patient proceeded to rally, and although there was a large abdominal blood clot, this absorbed, and she made an uninterrupted recovery.

**Uretero-Ureteral Anastomosis.**—The unintentional division of the ureter in operations in the abdominal and pelvic cavities is not of frequent occurrence. Nevertheless, remarks George Ben Johnson (Am. Gyn., Jan. 19, 1903), this accident is apt to occur in cases in which numerous adhesions exist, and the anatomical relation are much disturbed. The ureter may be so displaced from its normal position, and be so completely embedded in a mass of adhesions, as to make its identification practically an impossibility. In the event of such an accident, a decision as to the best procedure to follow is of paramount importance. Several methods of dealing with the condition are at hand: (1) The kidney on the injured side may be removed; (2) the ureter may be passed into the intestine, colon or rectum, into the vagina or through the abdominal wall; (3) the kidney may be brought down, and the extremity of the ureter sutured into the wall of the bladder; (4) an anastomosis may be made between the extremities of the divided ureter. This classification, while not exhaustive, covers the most important procedures so far devised. Of these methods the last two are the most worthy of consideration. Uretero-ureteral anastomosis would seem to be the operation of choice. Uretero-ureteral anastomosis, or uretero-ureterostomy, as the operation is designated by Kelly, may be performed in various ways. Henry Morris gives the following classifications: (*a*) End to end anastomosis by suturing the ends together in a transverse line; (*b*) end to end anastomosis; (*c*) lateral implantation; (*d*) end to end anastomosis by suturing the ends together in an oblique line. The transverse end to end method was used by Schopf (1886) in the first recorded cases of uretero-ureteral anastomosis. The objections to the operation were so serious that the operation has been almost discarded to-day. Poggi originated the end to end anastomosis. Lateral implantation was devised and described by Van Hook in 1893. Kelly was the first to apply this method to the human subject. The oblique end to end anastomosis was first used by Bovée. The author reports two successful cases in which the Van Hook method was employed.

**Ventrofixation.**—The following adverse criticism of the various forms of this operation are given by R. Gradenwitz (Z'blatt f. Gyn., Jan. 31, 1903): (1) The procedure of employing stumps of ligatures after the adnexa have been removed is not advisable. If retroversion or retroflexion has been present, ventrofixation is unnecessary, if the stumps may be sewn together or partially sewn together; (2) ventrofixation carried out on stumps of ligaments, that is, without an operation upon them, is to be condemned for the reason that they lead to the making of a pocket. Better results are obtained by the Alexander-Adams operation; (3) the method of bringing the front surface of the fundus up to the abdominal wall promises the best cure for retroversion, but should be condemned because of its danger of metritis, hernia through the abdominal wall, and disturbance of pregnancy and childbirth; (4) if one ligament has been removed, this operation leads to the danger of ileus. The Alexander-Adams operation is a good substitute, especially for posterior colpotomy; (5) after the climacteric, vaginal fixation is perhaps the best operation for these cases.

**Management of Difficult Breech Presentations.**—Difficult but not impossible breech presentations are most often seen in primipara, where the child is disproportionally large, because the mother's pelvis is slightly contracted; it may occur in any case in which the cervix, vagina and perineum are unyielding, and in multiparæ, when the child is extraordinarily large. It includes original breech presentations, and those which were vertex and have changed to breech by version. The following method of delivery, H. J. STACEY (Am. Jour. Obstet., Feb., 1903), believes to be original. Allow labor to progress naturally, until the breech is down nearly to the perineum; if the cervix is not disposed to dilate sufficiently to permit this, dilate with the fingers. Dilating instruments are not of use in this operation. Now gently push the child upward and bring down both feet. With the child's thighs in the cervix, reintroduce the hand—the palm of which, in the semiprone position, corresponds to the child's abdomen—and dilate the cervix and lower uterine segment thoroughly, until they are practically paralyzed. See that the cord is out of the way. Grasp the feet and draw the child slowly downward until the umbilicus is nearly at the mother's vulva, while an assistant, or the operator's hand, if necessary, keeps the head flexed so as to avoid extension, and consequent catching at the brim. The arms and shoulders are then quickly delivered, delivering the posterior arm first. and then rotating and delivering the opposite arm. The assistant then takes the child, while the operator quickly but carefully delivers the head with forceps. The advantages of this method of delivering breech presentations are (1) the time of labor is shortened; (2) there is little or no laceration of the mother; (3) the child is neither strangled or mutilated.

**Sarcoma of the Uterine Parenchyma.**—Sarcoma arising in and developing from the myometrium as a multinodular new growth of the uterus is a very rare and, from a clinical and pathological standpoint, one of the most interesting diseases of the female genital tract. HENRY D. BEYEA (Am. Jour. of Obstet., Feb., 1903) was unable to find more than seventy or eighty such cases in the literature. It would seem that no accurate clinical study of this class of uterine sarcomata had been made. Their hystogenesis is undetermined and is a question which has led to much discussion. Some investigators believe that they arise through a metaplasia of the muscle cells of a preexisting myoma of the uterus and are myosarcoma; others, that they arise in the connective tissue cell of such a tumor; still others, that they are primary sarcomata of the myometrium. It would seem probable that the first theory was the correct one; possibly some arise from the connective tissue and others from the myometrium. The author reports a case in which the hystogenesis was most doubtful and impossible to determine.

**Frequency and Etiology of Extra-uterine Pregnancy.**—The various statistical studies of this subject show widely differing points of view as regards cause and frequency. An additional series of cases is presented by W. HAHN (Münch. med. Woch., Feb. 10, 1903) who has collected all the cases in the Vienna hospitals and analyzed them. From 1892 to 1899, 241 laparotomies and 45 vaginal sections were done for extra-uterine pregnancies, with 21 deaths in the former and seven in the latter. These numbers are probably far below the actual figure, as private records were inaccessible. The author also found that the most common cause was gonorrhea, which accounts for the greater number of cases in the large cities. The increase in this condition, which has been noticed during the past few years, must be attributed to the greater prevalence of gonorrhea and also to the fact that a more precise knowledge of the history and symptoms has aided the diagnosis and has demonstrated that the disease is more frequent than heretofore considered. The final results of treatment, both operative and conservative, are quite good, the danger has been lessened and the prognosis in most cases can be considered favorable. The best prophylactic measure, it seems, is to guard against gonorrheal infection.

**Toxemia of Pregnancy.**—The eclamptic seizures are at the present day considered to be due to a general toxic condition of the blood rather than to a disease of the kidneys. W. H. WELLS (Phil. Med. Jour., Feb. 21, 1903) has also observed the effects on pregnant women of gastric and intestinal catarrhs following influenza, and considers that they are often the predisposing cause of what appears to be a very resistant form of toxemia. Plethoric rather than anemic women are affected, and the main symptoms are headache, ocular pain and soreness, photophobia, frequent micturition, urine less normal, a slight pyrosis, nausea and edema. One set of cases are marked by lesions pointing to the kidney disease. The second set presents symptoms of chronic gastro-intestinal catarrh, but with a urine characteristic of toxemia. Urea excretion should always be the principal guide in diagnosis and the latter should never be made from the presence or absence of albumin alone. The symptoms may resemble those of hysteria, and attention is called to the fact that hysteria may be caused by toxemia. Other conditions which must be eliminated are threatened miscarriage and acute indigestion. The author's recommendations for treatment are to increase elimination by bowels, kidneys, liver, and skin. He advises calomel, but in fair-sized doses, 5-10 grs., and combines it with sodium phosphate, 1 dram in four to five powders q. 1 h. High rectal irrigations are of greatest value on the verge of eclampsia.

**Fibroids of the Uterus.**—Impaction of a fibroid in the pelvic cavity is not a very uncommon complication, and is always fraught with considerable difficulty for the practitioner and danger for the patient. A. H. G. DORAN (Lancet, Feb. 21, 1903) says that pushing up the impacted fibroid is never a safe procedure, and is especially dangerous during pregnancy. Pregnancy may be overlooked in a young woman where menorrhagia is present and simulates menstruation. The fibroid is usually firmer than the gravid part of the uterus, and not rarely very much harder; the danger of pushing a hard mass against a soft mass is evident. A hard mass in the pelvis, associated with a pregnant uterus is usually supposed to be a fibroid, and when impaction is threatened many practitioners try to push the mass out of the pelvis. Experience teaches, however, that a small, thick-walled, dense ovarian cyst. pressed down into the pelvis may feel very hard when the hand contrasts it with the soft, pregnant uterus. The fact must be remembered, as rupture of an ovarian cyst in pregnancy is serious. Finally, about the whole matter of pushing up pelvic tumors in pregnancy. he insists upon the difficulty of diagnosis in these cases, where the tumor can seldom be exposed by manipulation. A swelling resembling a cystic fibroid might prove to be a hydatid cyst. Even when pregnancy is not present, a fibroid should not, in every case, be pushed out of the pelvis, because the fact of impaction is only certain when the operator knows on very reliable evidence that the mass thus fixed in the pelvis was recently free and movable. Tearing a broad ligament fibroid might entail serious consequences.

**Ectopic Gestation.**—The following conclusions on this subject are offered by KRÖMER (Arch. f. Gyn., V. 66, H. 1). The imbedding of the ovum in the tube is completed in accordance with physiological principles exactly as in the uterus, in the fact that the tissues of the mother take up and completely surround it. The difference between the later development of the ovum in the tube and those which occur in uterine implantation are probably explained by the structure of the tube wall, which is not adapted to the purpose of nourishing the fruit. The possibility of transference of the implantation of the ovum from the tube is at the present unknown. This is a fact which is probably explained by the deep intramuscular embedding of the ovum and the occurrence of pregnancy in a tube otherwise normal.

## NEUROLOGY AND PSYCHIATRY.

**Transverse Myelitis in a Newborn Infant.**—A most interesting and unusual case of spinal cord lesion in an infant is reported by A. H. DAVISSON and D. J. MCCARTHY (Phil. Med. Jour., Feb. 21, 1903). When first seen by the authors the child was two months old. The family history was negative. This, the fourth pregnancy, was a breech case and no details of the labor are given except that primary respirations were long delayed. The failure to move the lower limbs was noticed when four weeks old. At eight weeks the child seemed fairly well nourished, but presented a flaccid condition of the abdomen and lower limbs with absolutely no voluntary movements. There were no respiratory movements of thorax or abdomen, but at regular intervals there was a sinking in of the sides of the chest wall. Reflexes and sensation were absent up to the level of the xiphoid cartilage, above this the conditions were normal. No atrophy of the lower limbs was present, and the feet were warm. The diagnosis lay between a transverse lesion at the second or third dorsal segments and a stretching of the spinal roots. The latter, however, could be almost excluded by the anesthesia up to the cervical segments. The age at time of death is not mentioned, but the autopsy showed the cord collapsed from the second to the eleventh dorsal segments. The cervical and lumbar portions seemed normal. The pia of the collapsed area was thickened and the vessels tortuous. Microscopical examination was unsatisfactory, but the authors think the cord filled the pial tube, but as the result of a hemorrhagic process, softening of the cord and resorption of the degenerated cord substance took place. This may have been the result of injury at birth or it may have developed in the last months of pregnancy.

**Reflex Convulsions in Growing Boys and Girls.**—Convulsive attacks occur in rickety and highly neurotic infants during teething and other reflex irritations. It is not so well known, according to E. SMITH (Lancet, Jan. 24, 1903), that they also occur in pure reflexes during worry in children about 11 or 12 years old, members of families of distinct neurotic tendencies. There is one symptom in common deserving attention, namely, habitually cold feet in these individuals. It usually provokes little attention, but, if disregarded, may thwart the best efforts of the physician in treatment. With these cold feet, the child's sensibility to chills is increased. He can offer no effectual resistance to the sudden changes of temperature. Digestive derangement follows, malnutrition, and weakness and injurious tendencies are irritated. The nervous system is then readily thrown off its balance. If such nervous conditions may be controlled in the infant, they certainly may be in the older child. Such nervous seizures are as harmless in the older child as in the younger child, and apparently leave the patient in no worse condition, but there are cases where the condition becomes so chronic and recurrent that hardly any appreciable excitable cause may exist to bring them about. It is therefore advisable that the children should have their health built up, and such sickness and general depression as coldness of the feet should always have attention.

**Pathogenesis of Delirium in Infectious Diseases.**—Stimulated by the success of Betti in the treatment of delirium through application of leeches to the mastoid process, A. AMANTINI (Gazz. Osped., Feb. 8, 1903) has made use of the same measure in six cases; with the result that in all, delirium ceased within a few minutes to an hour after application. Judging from this experience, the author believes with Betti that delirium is largely induced by circulatory disturbances; and that the withdrawal of blood through the mastoid vein, and through that from the endocranial circulation, has a salutary effect upon cerebral congestion. To the objection that the circulatory disturbances of cardiac cases do not give rise to delirium, he makes reply that there is a distinction between cerebral congestion in general, and that occurring when the blood is charged with specific toxines; yet the small amount of toxine withdrawn from the system by leeching, in such conditions, would not alone account for its favorable effect. Moreover, many patients who give evidence of intense infection do not become delirious. The coincidence of delirium with hyperpyrexia, Amantini believes, is not due solely to the high temperature, but rather to congestion; as shown in the patient's face and at autopsy; viscosity of the cerebral tissue accompanied by arterial and venous hyperemia being seen. A further argument in favor of the congestive origin of delirium is found in a case reported by the author, in which delirium ceased upon the occurrence of epistaxis. Predisposition to delirium through alcoholism or hereditary neuropathy was definitely excluded in all the author's cases.

**On the Permanent Care of the Feeble-minded.**—In dealing with various plans for the care of feeble-minded persons who naturally fall within the numerous well-defined classes of this condition, E. F. PINCENT (Lancet, Feb. 21, 1903) mentions the following as the last kind of work recently undertaken by the Birmingham After-care Committee. It had been known for some time that there were a large number of idiots, imbeciles, epileptics and feeble-minded persons who had not passed through the regular classes of the institutions, and were not on the ordinary after-care lists of the committee. With the help of the School Board officials and others, a list of these cases was collected. After a sufficient number had been found, it seemed advisable to appoint a committee, consisting almost entirely of medical men, who undertook to examine and report on these cases. In this way the committee hopes to inform the city council of Birmingham the precise extent to which the evils exist. At any rate, it is intended to classify these cases under various heads, which should of themselves make it possible to do something for these dangerous and unfortunate members of society. The classes under which it is proposed to bring these cases are the following, consisting chiefly of two main divisions, namely, patients of the school age and those over the school age. Class A, those of the school age, *i.e.*, those under sixteen years of age, are divided into (1) those suitable for special classes for the feeble-minded. These, of course, have already been dealt with by the School Board appropriately, although the medical committee is finding some few cases which hitherto had escaped notice. (2) Cases which, for various reasons, could be better dealt with in boarding schools for the feeble-minded. Such cases have already been recognized, by the London School Board, for example, and classified under the following heads: (*a*) Mentally defective children who, but for their defect would be committed to industrial or truant schools; (*b*) mentally defective children living in very bad homes; (*c*) mentally defective children whose regular attendance it is not possible to secure at any school; (*d*) mentally defective children so far from any day school that it would be impossible for them to attend; (*e*) defective children known as "morally defective." (3) Epileptics. (4) Epileptics who are also feeble-minded. (5) Feeble-minded children who are also crippled, blind or deaf mutes. (6) Imbeciles and idiots. The class which includes those over the school age embraces the following subdivisions: (*a*) Mentally deficient, but capable of industrial work under supervision, *i.e.*, cases suitable for a permanent industrial colony; (*b*) mentally deficient, incapable of work, *i.e.*, suitable for a permanent colony; (*c*) epileptics who are capable of work in a colony; (*d*) feeble-minded epileptics; (*e*) feeble-minded persons who are also crippled, blind or deaf-mutes, and (*f*) imbeciles and idiots.

## PHYSIOLOGY.

**Rôle of the Duodenal Mucosa in Digestion.**—Recent studies have shown that the duodenal mucosa plays an important part in digestive processes, says L. Hallion, (Jour. de Méd. de Paris, Feb. 1, 1903), through its elaboration of secretine and enterokinase; the function of the former being to excite the secretion of the pancreatic juice, and of the latter to intensify its digestive power. The author quotes the experiments of Bayliss and Starling, which showed that when shreds of the duodeno-jejunal mucosa were treated with hydrochloric acid, a substance was obtained which, when injected into the blood, provoked an abundant secretion of pancreatic juice. To this substance the name of secretine was given. It is believed that the gastric juice with its hydrochloric contents fills a like rôle. Passing to the intestine, it there gives rise to chemical reaction resulting in the production of secretine. So also, the author states, will the administration of hydrochloric acid or képhir (a substance similar to kumyss and rich in lactic acid) in cases of deficient gastric secretion, excite production of secretine in the intestine and this in turn passing through the blood to the pancreas, stimulates the flow of the pancreatic juice; thus enabling the intestine to supplement, if not replace, the crippled gastric function. The author emphasizes the necessity in gastro-intestinal anastomoses for pyloric affections of making the anastomosis as high as possible, that the gastric juice may come in contact with an extended surface of the duodeno-jejunal mucosa; where alone secretine is elaborated. With a dry extract of the duodenal mucosa to which the name of enkinase is given, Hallion has demonstrated, in vitro, that neither that substance nor the pancreatic juice alone accomplish albuminous digestion; but when combined, such digestion is complete. In collaboration with Carrion, Hallion has made therapeutical application of these findings, in the preparation of an extract of the duodenal mucosa described as enkinase, which permits the utilization of the secreted pancreatic juice, and also in a combination of three parts of pancreatine with one part of enkinase under the name of kinopancreatine, the digestive power of which is said to be very great. These substances are given in specially prepared gluten capsules, so that they may not be affected by the gastric juice.

**Urobilin.**—An interesting paper read before the Anatamo-Clinical Society of Lille has for its author M. D'Hallvin (Nord. Méd., Feb. 1, 1903). He states that urobilinuria may be encountered under varied conditions as in febrile diseases, exaggerated destruction of red cells, hepatic affections, etc. It is well known that the hemoglobin derived from the destruction of the red cells, is transformed by the liver into bilirubin; and as such finds its way into the intestine through the bile. Under the influence of the intestinal ferments, the bilirubin is changed to urobilin. As to its ultimate fate, considerable diversity of opinion obtains; some holding that it is entirely eliminated in the feces; according to others it undergoes partial resorption by the liver, but never passes into the general circulation. D'Hallvin, however, holds that urobilinemia does occur either when resorption by the liver fails to take place or when that organ elaborates urobilin instead of bilirubin. According to the author a transitory urobilinemia occurs in infectious diseases; but it is permanent in the cirrhoses, in which the hepatic cells are more or less changed. When urobilinemia is present, the kidneys carry off the urobilin from the blood, and urobilinuria results. Aside from this secondary urobilinuria, it may occur when there is no trace of urobilin in the blood, but when bile is present in that fluid. In this condition of cholemia, the kidney has the power, by reduction and hydration, to change the bilirubin of the blood to urobilin. As to the prognosis, urobilinuria secondary to urobilinemia indicates disturbance of the resorptive and secretory functions of the liver. Urobilinuria secondary to cholemia, also points to hepatic trouble, but not of so serious an order. Moreover, absence of urobilinuria in the presence of urobilinemia indicates disturbance of the filtrating power of the kidney; and when cholemia exists, the non-appearance of urobilin in the urine suggests insufficiency of the kidney's reducing and hydrating function.

**Cigar-smoke and Hydrocyanic Acid.**—The discovery of prussic acid in various species of plants has awakened considerable interest in the inquiry, whether this highly toxic substance is present in tobacco-smoke or not. J. Habermann (Hoppe-Seyler's Zeitsch. f. Physiol. Chemie, Vol. 37, No. 1), finding only contradictory results in the literature concerning this theme, pursued a new investigation with the following results: In all cases the findings were negative as regards the fumes of cigars, not even the faintest trace of hydrocyanic acid could be detected.

## PEDIATRICS.

**Arthritis Deformans in Children.**—While the number of reported cases of this disease is not great, writes I. A. Abt (Wisc. Med. Jour., Jan., 1903), yet two distinct types have been distinguished. One type does not differ essentially from the disease in adults, but the other is different in its morbid anatomy and clinical symptoms. This latter variety shows a chronic, progressive enlargement of the joints with enlargement of lymph-nodes and spleen. The joint lesion consists of a thickening around the joints, rather than of changes in the bone or cartilage, and does not usually show the bony irregularity, or grating or effusion of the other variety. The onset is usually insidious, though occasionally there are rigors and high fever. Bad feeding and privations seem important causative factors, and the disease usually begins before the second dentition. A constant symptom is the lymphatic enlargement and the palpable spleen. Endocarditis has never been reported, though there have been cases with a low grade of pleurisy and pericarditis. In time the process seems to remain stationary, but the patient is helpless, owing to the joint involvement. The variety resembling that of adults usually begins after the second dentition, but Heberden's nodes are rare. Most of the cases follow exposure to cold and wet. Pain is a marked symptom, whereas it is almost absent from the other variety. The synovial membranes and the joint cartilages disappear, the bones becoming of ivory hardness and developing osteophytic growths at their margins. Atrophy of the muscles follows close upon the joint involvement. The two most important theories of causation are that it is a nervous disease, also an infectious disease. The enlarged spleen, involvement of the glands, and a daily temperature in the first described variety would favor the infectious theory, while the symmetry of the lesions, the atrophy of the muscles, and the glossy skin seem to point to a nervous origin. The treatment consists in the use of iodide, proper hygiene and a warm climate.

**Tuberculous Peritonitis.**—From a study of 41 cases at the Paddington Green Children's Hospital, G. A. SUTHERLAND (Arch. of Ped., Feb., 1903) reports that 27 were treated medically with 22 recoveries (81 per cent.), and 14 surgically with 7 recoveries (50 per cent.). Of the 29 that recovered 10 were under observation for less than a year, and 19 for from one to six years. The author's conclusions are that in uncomplicated tuberculous peritonitis the prognosis is good, is still favorable in the presence of tuberculous pleurisy and is less favorable if the patient shows a strong family history of tuberculosis, an infancy passed under bad hygienic or dietetic conditions, a feeble constitution, or a severe infective illness in early life. The symptoms which affect the prognosis unfavorably are continuous pyrexia, persistent diarrhea, rapid pulse, rapid wasting or recurrent acute exacerbations. The complications of unfavorable import are intestinal tuberculosis, extensive caseation of the mesenteric lymph-nodes or of tuberculous masses, localized suppuration from infection through lymph-nodes or the intestine, and obstructive symptoms from bands or matting of the intestine. A bad prognosis results from the rupture of a suppurating lymph-node, or the perforation of an intestinal ulcer into the peritoneal cavity, pulmonary tuberculosis, tuberculous meningitis or general miliary tuberculosis. The prognosis is not appreciably affected by simple laparotomy.

**Eczema in Nursing Infants.**—Aside from lack of cleanliness and the application of irritants to the skin, authorities recognize four great causes for this condition, viz.: parasites, dentition, neuro-arthritic heredity, and disturbances of digestion. F. QUILLIER (Le Prog. Méd., Feb. 28, 1903) believes that dentition may play an indirect rôle in causation by inducing improper nursing. It is noteworthy also, that the parts of the face supplied by the trigeminal nerve, which also supplies the dental region are most susceptible to eczema especially at the time of dentition. Heredity cannot be more than a predisposing factor. But, of all causes, the most common is improper or excessive feeding. It is the breast-fed infant and not the artificially fed that usually develop eczema, for, in the artificially fed, the mother's attention is directed to the care of her child, the quantity and quality of the food is definite and constant, the feeding more regular and cleanliness more likely to be observed. On the other hand the mother's milk is quickly affected by abuse of coffee, beer, etc., the return of menstruation, mental emotions, diet, etc. Not infrequently the milk becomes altogether too rich for the baby's simple digestive organs, as a result of indulgence by the mother in rich foods, especially meat. Often, also, a breast-fed infant is a regular glutton, taking 100 to 150 gms. of milk in three or four minutes. For treatment, first remove all scales and dessicated exudate by wet applications of potato- starch poultices, then apply an ointment as

| | | |
|---|---|---|
| ℞ | Vaselin | |
| | Lanolin, aa | gm. 15 |
| | Zinc oxid. | 4 |
| | Precip. sulphur | 1 |

Or a powder of talc or bismuth subnitrate. Internally keep the alimentary tract sweet by calomel, sodium bicarbonate of benzonapthol used in great moderation. At the same time regulate carefully the mother's habits and the times or nursing, if necessary, putting the child for a short time on mixed or wholly artificial feeding.

## HYGIENE.

**Transmission of Yellow Fever.**—Although the exact specific cause of yellow fever has not yet been found, authorities are generally agreed that it is a parasite similar in its life cycle to the malarial plasmodium. That it can be introduced into the human being by the bite of a mosquito has been proven beyond a doubt and that this is the only method of communication seems most plausible both from its analogy to other diseases and as a result of the most careful scientific experiments. J. W. ROSS (Med. Rec., Jan. 24, 1903) describes the experiments which were conducted in Havana to infect human beings by means of fomites and also the wonderful results which followed the attempts to prevent the mosquito from biting yellow fever patients and then subsequently biting well persons. The marked improvements in the sanitary conditions of Havana which followed the American control during 1899 and 1900 had an immediate beneficial effect in the spread of all infectious diseases except yellow fever. Early in 1901 special attention was paid to the extermination of the mosquito and the thorough isolation of all yellow-fever patients from the mosquito. As a result there was at once a gradual decrease in the number of these cases and since September, 1901, not one case has arisen in Havana. As no attention was paid to any other means of communication of the disease it seems just and reasonable to conclude that the mosquito is the only intermediate host between man and man for the specific cause of yellow fever.

## GENITO-URINARY AND SKIN DISEASES.

**Open-air Treatment of Syphilis.**—The importance of a general constitutional treatment in cases of syphilis does not seem to be fully appreciated and insisted upon. E. H. DOUTY (Med. Rec., Jan. 31, 1903) believes that the ravages from this disease depend more upon the soil upon which the poison falls than upon the virulence of the poison itself. In a large practice in a university town he had been greatly impressed with the fact that whereas a poor, underfed scholar, if infected, was hit painfully hard, the well-to-do athletic undergraduate generally suffered lightly, in spite of the fact that the latter was often very casual about taking his mercury. On account of this complete reliance which is placed upon mercury and potassium iodide, the general health is frequently much neglected and the disease is never entirely eradicated even if greatly improved. That such constitutions are in a favorable condition to acquire tuberculosis is proven by the fact that from 30 to 50 per cent. of the phthisis patients seeking relief in the mountains of Switzerland are syphilitics. If the inportance of careful attention to the general health and, if possible, a life in the open-air, which is recommended for the early cases of tuberculosis, could be urged upon the unfortunate victims of syphilis, the distressing tertiary lesions might be greatly reduced.

**Radiotherapy in Cancer.**—Of 47 cancers treated with X-rays by C. W. ALLEN (Jour. of Cut. Dis., Feb., 1903), 10 were mammary, 1 each, rectal, uterine and of the lymphatics of the neck; 3 sarcoma, and 1 supposed to be sarcoma, leaving 30, more or less, skin cancers alone, of which 2 involved the skin, 9 the nose or the nose and the cheek, 3 were multiple, 5 were upon the cheek near the eye, 4 were on the lip, and 2 on the arm. The results were: deaths, 5; cures and discharged, 25; improved and ceased treatment, 3; unimproved, 5; improved and still under treatment, 9. The conclusions which this author offers and bases upon this record are as follows: The X-ray possesses decided therapeutic power; but occasionally produces injury. His results show that it is not a passing fad, likely to be dropped after a brief experiment. The effect of the method sometimes produces severe symptoms in the heart, lungs and other viscera, pointing to absorption of disintegration products, which are thrown into the circulation more rapidly than they are eliminated. Metastases occur in grave forms at times more rapidly than in patients not so treated. Cancer itself may be produced by the injurious effect of the rays in a person not known to be predisposed. An example is furnished by a case which he reports of an X-ray tube-maker whose arm was amputated for cancer developing in an X-ray scar. X-ray dermatitis and many of the good effects as yet depend upon the proximity of the tube, the completeness of the vacuum and the degree of heat of the anode tubes may at times reach a "burning state" which must be learned by experience and observation. There is nothing to indicate when this condition is present, aside from the effect produced. This method of treating cancer is not to be relied upon solely in all forms of cancer. In the nodular, warty and dry growths, other means of removal, preferably by arsenic paste, should be employed, and then the rays may be applied. Indiscriminate application of X-rays to all forms of disease, as claimed to be practised by advertising institutions and by charlatans, and the deceit practised by calling other rays by this name are apt to bring much undeserved reproach upon a method which is really useful and whose effect is at times almost magical, but quite frequently disappointing.

## EYE, EAR, NOSE, AND THROAT.

**Chronic Sphenoiditis and Middle-ear Disease.**—This subject is introduced by Emerson (Laryngoscope, Jan., 1903), who examined 268 cases of chronic catarrh ofn the middle ear. Caries of the sphenoid was found 25 times. These 25 and 10 seen later gave 32 unilateral, and 3 bilateral cases. Twenty-one cases were of chronic catarrhal otitis, 4 chronic suppurative, 7 chronic catarrhal on one side and chronic suppurative on the other. Headaches were the rule; 9 had vertigo. The head-pain was often only one-sided, where the sinus trouble was on the same side. Tinnitus often disappeared when the middle turbinate of the side affected was removed and the sinus curetted. "There is a relation between the pus formation incident to sinusitis and atrophic changes in the nasopharynx."

**Electrolysis in the Eustachian Tube.**—In the Jan. 1903, number of the Laryngoscope two articles of value on this subject are given. The first by Norval H. Pierce gives the result of a study of this treatment in 20 cases after other treatment had been tried. Ten were cases of "oto-sclerosis, or rarefaction of the labyrinthine capsule." Eight were catarrhal, one nervomuscular, one syphilitic. The oto-sclerosis cases were all treated once a week for two months together with catheterization every other day. Audition was not improved in any one of them; nor were the entotic sounds diminished. Tuning fork tests for upper and lower limit were unchanged. In none of the eight catarrhal cases was there any improvement beyond that by other methods. "In a certain few cases where there is probably a soft exudate near the isthmus, ths treatment may be of some value." In the second article by J. O. Tansley a minute account is given of the finding of a broken end of an electrolytic bougie in the pharyngeal opening of the tube, whose removal permitted of beneficial treatment by the ordinary methods. The analysis of 33 cases given by Harris, is referred to as showing its results, which are disappointing and the treatment not without danger and certainly not better than other methods.

**Follicular Conjunctivitis and Trachoma.**—The larger number om cases of trachoma, which have been reported among school children of this city, has led to the suspicion that a mistake in diagnosis has been frequently made. Considering how difficult it is even for an expert to differentiate between follicular conjunctivitis and trachoma it is perhaps not to be wondered at that the superficial examinations made by inexperienced men should result in numerous errors. E. M. Alger (Med. Rec., Jan. 24, 1903) points out that trachoma is a comparatively rare condition in children while follicular conjunctivitis is very common. They are both characterized by granulations which cannot be differentiated either macroscopically or microscopically. These granulations are simply collections of adenoid tissue. In trachoma the essential feature is the hypertrophy of the conjunctiva. Without this there can be no future development of scar tissue and the disease is a trivial one. The subjective symptoms of trachoma are noticeable. The patient complains of gluing of his lids, photophobia, sand in his eyes, the upper lid is partly dropped and there is more or less purulent discharge. In a portion of the cases injury to the cornea follows, either ulceration or pannus. When the thickening of the conjunctiva has reached a certain height a process of cicatrization begins and continues till the hypertrophic tissue has been replaced by a thin white scar and it is from the contraction of these scars that the most troublesome sequelæ come. Follicular conjunctivitis is simply the reaction through the lymphatics of the conjunctiva to local irritation which may be chemical, mechanical of bacterial. On the lids there are small wound granules, not larger than pin heads because they are limited by the close adhesion of the membrane to the lid, but in the loose tissue of the fornix they are much larger, resembling frog spawn. The symptoms are usually very slight and the trouble will disappear if the cause of the irritation is removed. Since a fair percentage of the children who were recently condemned to trachoma, received their first intimation of any eye trouble when they were told by the examining physician it is reasonable to believe that the natural mistake of confusing the two conditions was frequently made. In treatment there has been an equal confusion. In trachoma it is considered an ideal result to get finally a thin white scar not capable of contracting unduly or of causing irritation to the corneal surface, and many have been led in the pursuit of this ideal to treat with bluestone and silver nitrate follicular conjunctivitis which would not develop scars even if left entirely without treatment. The latter cases are generally benefited by cod-liver oil and iodide of iron. Locally, good results may be obtained by applying with a swab, at least three times a week, a solution consisting of:

| | | |
|---|---|---|
| ℞ | Ichthyol | ♏ xv |
| | Tr. Iodi | ʒ j |
| | Glycerini | ℥ j |

As the conjunctiva improves the solution is rubbed in more vigorously. On the alternate days an instillation of the following is made at home:

| | | |
|---|---|---|
| ℞ | Zinci Sulph. | gr. j |
| | Vin opii | ♏ viij |
| | Aquæ | ℥ ss |

M. et Sig.: One drop in each eye t. i. d.

Expression is perhaps helpful if the child can be closely watched but it is unnecessary and a majority of the cases must be treated without it. The treatment of real trachoma demands a more thorough and careful management under the close observation of a competent medical man, to avoid the serious results of scarring.

**Ozena in Nurslings.**—One-tenth of the cases of ozena treated by A. RIVIÈRE (Jour. de Méd. de Paris, Feb. 15, 1903) occurred in infants under one year; therefore he holds that the affection is of more frequent occurrence in early life than is generally supposed; and that in many cases diagnosed as chronic coryza and infectious purulent or impetigenous rhinitis, careful examination would show the characteristic atrophy of the turbinates and nasal mucosa, wide nasal fossæ, crusts and malodor of ozena. Under appropriate treatment he has not only seen the local trouble subside but complicating gastro-intestinal disturbances disappear; marked improvement in the general health ensuing. Rivière treats such cases by daily irrigation of the nasal cavities with halt or boracic acid solution; using in preference a soft urethral catheter connected with the delivery-tube of a vessel suspended not more than 0.15 to 0.20 above the child's head.

## THERAPEUTIC HINTS.

**Large Doses of Salicylates in Uveitis.**—By mistake a patient of H. McI. Morton had taken four or five 60-grain doses of salicylate of soda every three hours with marked improvement next day of the uveitis. In subsequent use of large doses he had noticed similar response in this disease. He cites Marageliano in support of the view that it is not a depressant of the heart, for the arterial pressure is elevated in moderate dosage. In severe cases MORTON (Oph. Record, Jan., 1903) gives 40 grains of the salicylate every two or three hours till relief is obtained.

**Calomel in Pneumonia.**—The beneficent influence of calomel in pneumonia is emphasized by C. BERTALOZZI (Gazz. Osped., Jan. 18, 1903) who, in one case, not only gave the drug with excellent results in the onset of the disease, but apparently brought about a sudden and remarkable improvement when the disease was at its worst and the patient profoundly exhausted from its effects, through repetition of the initial treatment, *i.e.*, calomel 0.65, scammony 0.25. Prior to its administration the temperature was 39.5 C., pulse 110, respiration 43. The day following, the temperature dropped to 36.6 C., pulse 70 and respiration 38. This seemed to mark the turning point in the disease; abundant perspiration ensuing after the one large stool produced by the remedy, and evidences of the breaking up of consolidation soon being apparent on percussion and auscultation. The author concludes that the influence of calomel in pneumonia is to be attributed to the cutaneous vasoparalysis and subsequent perspiration it induces in common with antipyretics in general, and to its intestinal derivative effect by means of which a good part of the blood is drawn from the lung and the toxic principles with which the organism is embarrassed, carried off in the abundant stools.

**Pilocarpine in Scarlet Fever.**—The physiological effects of this drug are exerted chiefly upon the secretions in the following order of potency: salivary, muciparous, mammary, sudoriferous, lacrymal and renal. Vomiting is frequent, the pulse slower and softer, the respiration superficial and retarded. Amblyopia occasionally supervenes, and the growth of hair may be stimulated. Increased leucocytosis is invariable. There are many contraindications to the use of the drug, as in cardiac or respiratory difficulties, asthenia, the very young, the aged, and where the system cannot stand depression. E. W. SAUNDERS (Arch. of Ped., Feb., 1903), finding that, according to the researches of the Pasteur Institute, the saliva possesses the greatest toxilytic power of all the secretions and is poured out in the locality where the scarlatina toxins are formed, regards pilocarpine as the most valuable single agent against scarlatina and its associated affections. It should not be given in immediate conjunction with the coal-tar antipyretics, and each dose is better preceded by bathing. Chloral is nearly always indicated in small, frequently repeated, doses. In case of disagreeable effects from pilocarpine, a hypodermic of atropine, the "physiological antidote" will protect the patient. Toleration is rapidly established. A great gain is in the prevention of parched mouth and lips.

**Gelatinized Serum in Typhoid Hemorrhage.**—On the eighteenth day, in a case reported by VIDAL (Le Progrès Méd., Feb. 14, 1903), the patient having sustained a large hemorrhage, was given an injection of 250 gm. of saline. The bleeding continued, however, in spite of two subsequent saline infusions. So 20 c.c. of gelatinized serum were injected hypodermatically and 250 gm. given by rectum. The next morning the patient was better, having been through the night stimulated with caffeine, strychnine and camphorated oil. Apparently the bleeding had ceased. Ten c.c. more of gelatin serum were administered and saline every twelve hours, and there was no further hemorrhage. To make gelatin serum it is necessary to take a very pure gelatin, that prepared for bacteriological purposes, dissolve it in an isotonic liquid, such as normal saline, filter it hot into flasks, and subject these to a temperature of 115° C. for fifteen minutes. If it is heated longer the serum may solidify very hard on cooling. This is a fine culture medium for bacteria, therefore should be fresh made and much care taken in its preparation. The serum slowly solidifies, so before use it must be brought to a perfect liquid at 50° C. (122° F.). Should it be kept, contamination is at once evident by the appearance on its surface of bacterial cultures.

**Falling of the Hair.**—

| | | | |
|---|---|---|---|
| ℞ | Pilocarpinæ nitrat. | 0.50 | (gr. viij) |
| | Tinct. cantharidis | 10. | (ʒiiss) |
| | Glycerini | 25. | (ʒvj) |
| | Aq. Cologniensis | ad. 240. | (℥viij) |

—Bulletin Gén. de Thérapeutique, Jan. 30, 1903.

**Headache from Eye-strain.**—Of local applications, the simplest, most effective and least harmful, according to C. A. WOOD and T. A. WOODRUFF (Med. Stand., March, 1903), are very hot or very cold fomentations. Fold a towel to twelve inches by four, dip into water at 40° C. or at 160° to 180° F., and press gently against eyes, forehead and temples. Repeat every fifteen seconds for five minutes. A soothing collyrium may relieve by its action on the congested conjunctiva, as:

| | | | |
|---|---|---|---|
| ℞ | Sod. borat. | | |
| | Ac. borici | aa. gm. 2. | (℥ij) |
| | Aq. camphoræ | 15. | (ʒss) |
| | Suprarenal | 0.7 | (℥ss) |
| | Aquæ q. s. ad | 60. | (gr. x) |

Shake well, allow to stand an hour or two, and use the supernatant liquid to drop into the eye. Another effective eyewater is:

| | | | |
|---|---|---|---|
| ℞ | Chloreton. | 0.1 | (gr. jss) |
| | Sod. borat | 0.5 | (gr. viij) |
| | Aquæ | 30. | (℥j) |

A local application to forehead and temples is:

| | | | |
|---|---|---|---|
| ℞ | Spt. Camphoræ | 30. | (℥j) |
| | Spt. Lavand | 90. | (℥iij) |
| | Alcohol | 90. | (℥iij) |

Or the following liniment:

| | | | |
|---|---|---|---|
| ℞ | Chloroformi | 30. | (℥j) |
| | Camphoræ | 8. | (ʒij) |
| | Tinct. aconiti | 8. | (ʒij) |
| | Ol. menth. pip | 0.7 | (♏x) |
| | Alcohol | 60. | (℥ij) |

Temporary relief may usually be obtained from a weak galvanic current.

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## SATURDAY, APRIL 4, 1903.

### THE SIMPLICITY OF MODERN SURGERY.

It is gratifying to be able to feel that a very simple cosmos is shortly coming out of the dreadful chaos in which surgery has been for the last thirty years. It was a prodigious effort for the great surgeons who are now all but passed away, to assimilate, to practise, and to teach the overwhelming changes which have come within that time. They occupied an unenviable position in that they were obliged to graft upon the teachings more ancient than Æsculapius the wonderful revelations of an undreamed of science. Very naturally none or almost none of them were able to disentangle themselves from the old, from the useless, from the dross that had been handed down to them from the past centuries. Even modern text-books of surgery, which are written by the students of this great generation of men, are still encumbered by much that is old, ill timed, and useless.

Starting with the assumption that asepsis has made all things possible in surgery, it is exceedingly interesting to note what sweeping changes have been made in time-honored operations by the perfection of some simple technic or the introduction of an insignificant instrument. When Reverdin and Thiersch taught that the transplantation of skin grafts was a simple matter, they little dreamed how destructive the application of their experiments would be on many operations that had been considered impregnable in their perfection. Take for example the modifications wrought by this innovation in the technic of amputation of the breast. It has done away here as in many other cases with plastic surgery.

Not as important as this from the standpoint of saving life, but of great value in giving to the living longer, and therefore more useful, extremities after amputation, is the application of skin grafting to the stump following the removal of fingers and of toes. In many cases, even relatively proximal amputations are finished by skin grafting instead of by the use of the classical flaps. This effects a saving of perhaps ten per cent. in the length of the part.

Finney has taught how unnecessary are the complicated operations for that minor but grievous disorder, ingrowing toe-nail, all requisite being a shaving away of the nail and soft tissues followed by skin grafting. So grafting is seen to modify surgery as well as other arts.

An immense amount of space is devoted to such classic works as Pancoast's Operative Surgery, to the methods of ligating arteries in their continuity. Page after page deals with the problem of arresting hemorrhage. How rarely do we see an artery tied to-day proximal to the seat of trouble and how easy it is to control the flow of blood with our hemostatic forceps.

It is, perhaps, in the most recent treatment of peripheral aneurisms, that we can recognize, better than elsewhere, the simplicity of the modern trend. The Greek, Phillagrius extirpated the sac in toto. Antyllus left it in situ, ligating above and below. Hunter, Anel, Brasdor, Wardrop, and others selected special points at which to tie. Tufnell, of Irish fame, recognizing the futility of all existing treatments, proposed that all aneurisms be treated by the formula: "Rest, starve, purge and K. I." It never occurred to anybody that the simplest treatment was to open the sac, ligate the lumina which lead to the vessel and obliterate the cavity by a few simple stitches, thus curing the disease without interrupting the potency of the artery. This has very recently been successfully practised by Matas of New Orleans. For thirty years asepsis had made such a technic possible but the yoke of the old treatments clings so tightly that progress is painfully slow.

We are arriving, however, and the students of ten years hence will not have to unlearn so much surgical dross as it has been our lot to do.

### PNEUMONIA'S INCREASING VICTIMS.

The fatal months of the year, that is, the months in which the most deaths occur, are March and April. This is of course for adults, for, as is well known, for children under five years of age, July and August are the special death months. Practically all the statistics show March to be the most fatal month of the year, but, curiously enough, April is a very close second. When we consider how presumably unhealthy are the colder blustery winter months, from December to February, it may be somewhat of a surprise to find April with so bad a reputation. The month deserves it, however, mainly because of the large number of deaths from pneumonia which occur during this changeful period.

Pneumonia is coming to occupy an ever more and more prominent place in the mortality list of our large cities. Even in the last three years there has been a distinct deterioration of conditions, so that a still higher death-rate from pneumonia is found to exist than even in 1900. The Chicago Board of Health made a public statement not long ago that since the census year, 1900, pneumonia has claimed more than one-eighth of all the victims of the Grim Reaper in Chicago, one-third more than consumption and 46 per cent. more than all the other contagious and infectious diseases combined, including diphtheria, erysipelas, influenza, measles, puerperal fever, scarlet fever, smallpox, typhoid fever and whooping cough." The total number of deaths from all these diseases, during 1901 and 1902 was only 4,489, as compared with a total of 6,562 deaths from pneumonia.

Since pneumonia has thus become "the captain of the men of death," to use Professor Osler's expressive phrase, replacing consumption, which had occupied that bad eminence for so long before, it is important that prophylactic measures should now be directed mainly to the reduction of pneumonia mortality. The task is not an easy one and looks by no means promising, but twenty-five years ago to have announced that the reduction of the mortality from consumption must be attempted would have seemed quite as hopeless a task. At the present time, however, the consumption mortality has diminished about one-third on the average in the large cities of this country and the outlook for further favorable progress in this matter is most promising. Doubtless the same thing will be true of pneumonia, if persistent and concerted effort is made, with the proper realization of what the elements of danger with regard to the disease really consist in.

Pneumonia is most fatal at the extremes of life, among the very young and the very old. These classes of individuals then must be guarded as carefully as possible from infection and contagion and must never needlessly be allowed to associate with those who are suffering from pneumonia, or be brought in contact with any of the discharges from the lungs of such patients. This may seem a needlessly refined precaution, or rather it may seem pushing precautions entirely too far. Twenty-five years ago the same objection would have been made to the taking of similar precautions with regard to tuberculous sputum. Now regulations insisting on the utmost care with regard to expectorated material are accepted as the only rational course to pursue. It is well known that pneumonia, no matter what its cause, in a hospital ward containing a number of young patients, is likely to affect several of them in succession and while not virulently contagious, there is surely a contagious element present.

The deaths from pneumonia among adults usually occur under special conditions. Fatal cases occur typically in individuals who contract pneumonia while suffering from kidney or heart trouble. It is well understood that among the middle-aged, according to the familiar expression, it is not the pneumonia itself that is dangerous, so much as what the patient takes into the pneumonia with him. Patients suffering from heart disease or nephritis, should be warned to avoid, especially in the springtime, what are now generally conceded to be the occasions of pneumonia. They should, during unsettled weather and particularly while pneumonia is prevalent, avoid, as far as possible, getting into crowds in cars or depots and the like, and should not frequent crowded theaters and other overheated public places. These precautions are especially necessary for those who have once suffered from pneumonia, as it is well understood that the disease, far from conferring immunity, rather produces a predisposition to recurrence.

Another important factor in the mortality of pneumonia is the delay so often foolishly presumed upon by young and otherwise healthy adults, in giving up their ordinary avocations and recognizing that they are ill. A patient who walks about until the third or fourth day of a pneumonia, no matter how robust his previous health, will surely succumb to the disease. Family physicians should make it a rule to warn members of families under their care that the occurrence of a chill after a few days' uncomfortable feelings, followed by some febrile temperature, should be the signal for remaining in bed until the physician's permission has been obtained to go out again. This simple rule, if faithfully followed would save many a life. The exhaustion consequent upon even slight muscular effort during the initial stage of a pneumonia is enough in itself to make an otherwise mild case likely to be fatal.

There is and remains a curious coincidence, at least between the curve of frequency of pneumonia and the occurrence of windy days, during which dust is blown about. It seems not unlikely that this points to the necessity for our municipal health authorities taking care to lay the dust and by efficient street cleaning preventing the accumulation of material that may prove pathogenic when inspired. A dustless city is no utopian dream, and will some time surely come. Meantime it is to be hoped that the enforcement of the regulations against expectoration in public places, which has been begun in very serious spirit of late years, will be continued. Pneumonia is no accidental occurrence. The germ may be present and virulent, but there seems no doubt that every opportunity given for its distribution is an invitation for the spread of the most fatal disease with which we have to deal at the present time.

## MEDICAL JOURNALISM.

Those of us who are still wrestling with the problem of how to supply a sufficient quantity of literary pabulum to our medical brethren feel a touch of envy at the slippered ease of our whilom contemporary, Dr. James C. Johnson who, until recently edited and managed the *Journal of Cutaneous and Genito-Urinary Diseases.*

He indulges in a little retrospect of medical journalism in the columns of the *Philadelphia Medical Journal* and cleverly sets forth an editor's "struggles with printers, photo-engravers, lithographers, paper-makers, post-office authorities and non-paying debtors."

It is a heart-to-heart talk that reveals the editor to the contributor, and both to their readers. He admits the fact that we do not write all our own editorials and book-reviews and abstracts, and that we are publishing about twenty-five times as many journals as our readers really need.

He voices our own opinions when he says "Circumnavigation of the circumambient is a favorite pastime of medical authors." "A meaner man than the one who married on Christmas day a girl whose birthday was the twenty-fifth of December is he who sends his article to all the journals he knows of at once, and prays for an immediate hearing."

He touches the author's heart when he says, "The best reviewer is one who not only knows the subject, but has written on it, if possible, a book. His justice is then tempered with mercy. Destructive criticism is almost the easiest of literary pyrotechnics and, while it may be a choice spectacle, there is nothing left but aerial smoke."

As he tritely remarks, "Journalism is, like eczema, a blood disease, and can rarely be cured in a lifetime;" so those of us who are undergoing the throes of editorship are only hoping that Dr. Johnson will have another attack.

## ECHOES AND NEWS.

### NEW YORK.

**Eastern Medical Society.**—The Eastern Medical Society held its Annual Reunion at the Hotel Marlborough, Saturday evening, March 28, 1903.

**City Consumption Camp.**—Commissioner Lederle of the Health Department sent to Mayor Low Monday a letter urging the establishment of a sanitarium for the treatment of tuberculosis on the tent and ducker plan, on a tract of twenty acres in Orange county, which has been offered to the city for two years, without rent. Dr. Lederle says that 8,883 persons in this city died from lung diseases in 1902, and 8,135 in 1901. The time has come, he says, when the city should increase its facilities for treating tuberculosis. He has been much impressed by the opinions of leading physicians with regard to the efficiency of the open-air treatment, but the plan of the Charity Organization Society's committee for a tuberculosis sanitarium and camp is too elaborate and costly. With the appropriation of $35,000 he could operate a camp for sixty patients on the Orange county tract from May 1 to Dec. 31 next. The occupation of this ground will cost the city nothing, and if the outdoor treatment suggested should prove successful he predicts there will follow a development on a large scale of this method of dealing with tuberculosis.

**The Late Dr. T. Gaillard Thomas.**—At a meeting of a committee appointed by the Medical Board of the New York Infant Asylum held March 30, 1903, the following resolutions were adopted:

*Whereas,* The late Dr. T. Gaillard Thomas for several years and at the time of his death was a consulting obstetrician of the New York Infant Asylum and President of the Medical Board, an office in which he exhibited wise counsel and charming geniality, and

*Whereas,* Dr. Thomas was a man of great eminence, well known to the medical profession throughout the world, by virtue of whose character and renown much honor was reflected upon this Institution, therefore

*Be it resolved,* That the Medical Board of the New York Infant Asylum record the death of Dr. Thomas with a sense of deep regret and inexpressible loss, and further

*Be it resolved*, That a copy of these minutes be sent to the bereaved family, and to the principal medical journals, and inscribed in the records of the New York Infant Asylum. Signed: J. Milton Mabbott, M.D., George Tucker Harrison, M.D., Committee.

## PHILADELPHIA.

**New Hospital for Frankford.**—The charter for a new hospital on Frankford avenue, to be known as the Frankford Hospital, has been granted. The Board of Trustees are physicians who are also members of the medical staff. The question of erecting a modern hospital building in place of the present quarters will soon be considered.

**The Evans Dental Museum.**—Settlement of the various suits instituted against the estate of Dr. Thomas W. Evans, the well-known Philadelphia dentist, who died in Paris about five years ago, and who left the bulk of his property, valued at over $3,000,000, toward founding a dental institute and museum in this city, having been effected, a meeting of the directors of the corporation formed to look after the details was held March 30. This meeting was for the purpose of devising means for carrying the testator's will into effect. The proposed institute and museum, which will contain all the valuables and souvenirs that were given to the testator by nobility, will be located on property belonging to the estate in West Philadelphia.

**Colleges Secure Amendment of Pennsylvania Medical Bill.**—Through the efforts of a large number of educators and some physicians, the Ray Medical Council and State Board of Medical Examiners Bill, which had already passed the House, has been amended in the Senate. The principal objections to it was that, as it passed the House, it robbed every small college of the State of the right to have its graduates receive credit in any medical college for one year of scientific work. Under existing conditions students from colleges are entitled to enter the second year of any medical college in the State. Under the original Ray Bill this privilege was withdrawn, and before a student could enter a medical college, he was compelled to present a diploma from a high school or college, and without the accompanying reduction of one year. Since the bill reached the Senate it has been amended to read as follows: "Provided that a graduation from a literary college of good standing after two years of scientific work in the college shall be accepted by the Medical Council of the State of Pennsylvania as an equivalent for the first year in a recognized medical college, provided that it is accepted by the medical college as dealing adequately with chemistry, physics, physiology, anatomy, and the biological sciences.

**The Choice of an Anesthetic.**—In a paper on the above subject read at the County Medical Society March 25, Dr. G. G. Davis said that the choice depends largely on custom and environment, but the surgeon should avoid the routine use of any one anesthetic. Dr. Davis at one time felt that ether was the anesthetic of choice, unless there was a distinct indication for chloroform, but was afterward convinced by certain cases, two of which he detailed, that ether can and does kill. Hence, it cannot be regarded as absolutely safe. The writer prefers anesthol to chloroform. Ether should be used where shock is liable to be a complication. Nitrous oxide before ether is a valuable adjunct if rightly used. Closed etherization should never be employed except by those who are expert in the use of that method. Bromide of ethyl is not to be recommended. In closing, Dr. Davis called attention to the value of primary anesthesia in minor operations.

**Preparation of the Patient for Anesthesia.**—This phase of the subject of anesthesia was considered by Dr. J. G. Clark, who said that the principal danger in anesthesia was from the anesthetic in the junior assistant's hands. Hence the employment of a definite salaried anesthetizer is the chief point to be looked to as diminishing the danger to the patient. The benefit of this method has been well demonstrated at the University hospital since it was instituted nearly two years ago. Regarding the actual preparation of the patient, Dr. Clark said that many patients were now operated upon within 24 hours after coming to hospitals, which meant that many functions were overlooked in the necessarily hurried preparation. The organs to be particularly examined are the lungs, heart and kidneys. An acute coryza, even in the subsiding stage, is a dangerous condition, and hence a contraindication to operation. Pneumonia has followed anesthetization in some of these cases. On the other hand chronic bronchitis of several years' standing, instead of being a contraindication, has been seen to clear up under even a prolonged anesthesia. As to the condition of the blood, the complexion index is usually taken as a reliable indicator. Rather severe anemias have not acted so as to make them a serious contraindication. The most vital point is the condition of the kidneys. In this connection Dr. Clark states his belief that the danger of terminal infections following operation upon persons with faulty kidneys is greater than that from the actual anesthetic. Such infections have caused death in some cases. Hence the bowel and kidneys should be evacuated before operation, not so much because of the contents themselves affecting anesthetization processes as for their possible favoring of subsequent infections. Calomel in broken doses should be given the evening before operation, and enemas about two hours before. Water in large quantities may be ingested in order to flush the kidneys up to two hours before the anesthetic is given or even just before it is begun.

In discussing the question of anesthesia, Dr. W. L. Rodman stated his belief that surgeons were remiss in allowing the least experienced hospital resident to give the anesthetic. The stomach of the patient should be empty when the anesthetic is begun, hence he would not sanction the taking of water by the patient as mentioned by Dr. Clark. No tongue instrument should be used by the anesthetizer. No general anesthetic should be given in cases of empyema. Chloroform is safer at times than ether, and even in this latitude is perhaps better in many instances during the hot season. He has never seen a death from ether primarily, but has seen deaths resulting secondarily. If the secondary as well as the primary deaths due to ether are counted, it is a question if the entire number is less than those due to chloroform. The difference between these two anesthetics, in Dr. Rodman's opinion, is not so great as it is commonly said to be.

**Some Observations Concerning the Physical Characteristics of Nutrient Gelatin.**—As the guest of the Philadelphia Pathological Society March 26, Dr. Edward K. Dunham, of New York, spoke of the physical characteristics of nutrient gelatin with special reference to their influence upon colonies of bacteria. A series of lantern slides were shown as illustrations. Dr. Dunham said that it had always been a perplexing question as to why colonies of bacteria were often so different on different gelatins, and this fact had led to the studies detailed. The observations were confined to deep colonies of non-liquefying organisms. The principal difficulty presenting is that of measuring the density or "stiffness" of the gelatins employed, as this depends on the quantity, quality, amount of heating, etc. Many methods were employed to determine this point, and finally the viscosity of the gelatines when melted was selected as the one giving the most satisfactory results, though this is by no means free from objection. The instrument devised for measuring this property is based on the principle of passing 15 c.c. of the melted medium through a capillary tube, and taking the time as compared with the passage of an equal quantity of water. The principal objection to this method is that it deals with the melted medium instead of with the solid form as desired. The object of the experiments was to determine the differences of growth as caused by different physical conditions of the media, and thus help in distinguishing species of organisms. The differences were well shown by the lantern slides presented. The subject has not been thoroughly worked out, but gives promise of being a valuable aid along the lines mentioned.

**The Development of the Islands of Langerhans in the Human Embryo.**—Dr. Richard M. Pearce detailed the results of a study made upon 21 human embryos, varying in age from seven weeks to seven months. The pancreas from each was carefully studied, the series giving a view of the development of that organ that is rarely obtained. In the earliest stage studied, that is, in a seven weeks' embryo, there is seen at a certain part of the periphery of the tubules a distinct proliferation and differentiation of cells. These areas lie in the concavity of the tubules, and the cells stain deeply. In embryos from eight to ten weeks, there is seen evident vascularity of these proliferated areas. At the end of three months these processes are separated from the acini, and there is a solid mass of cells connecting the islands with the gland acini, from which it was derived. At this stage there is distinct vascularity, the vessels coming from all sides instead of from one side only, as in the Malpighian bodies of the kidney. This stage is followed by the separation of the island from the acinis, connective tissue appearing and completing the separation. The study of a pancreas from a syphilitic embryo of seven months, showed practically the same condition as that presented by the pancreas of a normal embryo at three months. The connective tissue of the organ in question equaled or exceeded the gland structure, this probably leading to arrest of development. Further stages in the development of the pancreas are not of special interest in this connection, the principal change being the surrounding of the islands by the gland tissue. This study furnishes an anatomical basis for the idea that the islands of Langerhans have a distinct function.

## CHICAGO.

**Influenza.**—This disease is still rampant, and is largely responsible for the higher death-rate of the winter. It continues to be reported as a fatal complication of consumption, Bright's disease, pneumonia and heart disease among the aged, and of the acute contagious diseases of childhood.

**Frederick Mueller to Locate in Chicago.**—Dr. Frederick Mueller, former assistant to Dr. Lorenz, has returned to this city, and hereafter, according to the daily press, will practise the specialty of orthopedic surgery.

**Pneumococcus Septicemia.**—At a meeting of the Chicago Medical Society, held March 25, Dr. J. L. Miller read a paper on this subject. He said that bacteriemia was a more suitable term than septicemia. Whether an infection remains localized or becomes generalized depends largely upon the resistance of the individual, and the virulence of the infectious agent. The diplococcus pneumoniæ inoculated into a highly susceptible animal, as the mouse and rabbit, does not manifest itself as a localized process, but becomes a bacteriemia. In less susceptible animals, when inoculation is made directly into the lung, a process resembling pneumonia follows. Pathological findings, animal inoculations and clinical observations indicate that pneumonia is often a septicemia before blood cultures actually demonstrate the organism. Two investigators report positive cultures from the blood in all cases examined; 154 cases collected from other reports show positive results in 24 per cent. The earliest positive results were obtained upon the second day of the disease. Blood cultures will be of little diagnostic aid, as the disease is easily recognized from the physical findings. From a prognostic standpoint, it is of value, a bacteriemia indicating a grave infection. Eighty-seven per cent. positive cases died, and only 22 per cent. of the negative cases.

**The Diagnosis of Pneumonia.**—Dr. Arthur R. Edwards read a paper, at the same Society, on this subject. He said that mistakes are rare in the diagnosis of primary frank pneumonia in adults. They occur mostly in the aged, alcoholics, children, and in pneumonia secondary to cancer, nephritis, diabetes, etc. Therefore, the physician should watch all diseases when the respiration, pulse and temperature rise, or when, even without these or other symptoms, the subject of chronic disease is not doing well. The onset symptoms, the chill in adults, convulsions in children, vomiting in the very young or in adolescents, suggest at least the possible onset of lobar pneumonia. Chill, pain in the side, sudden high fever, and rusty sputum are almost positively final, since pneumonia is practically the only disease where they occur, guarding against the chief diagnostic confusion, infarct of the lung, in which the same symptoms may obtain, although here the sputum is reddish, but is not viscid, and is usually far more abundant than in pneumonia.

As to diagnosis from the physical findings in the lungs, these findings are usually detected in the frank case of pneumonia on a thorough thoracic examination, and as a rule appear within two days after the characteristic symptoms of onset. These physical findings were detailed.

The author presented a table differentiating pneumonia from effusive pleurisy.

Pneumonia in children occurs with an abrupt onset without chill (before the seventh year), but with vomiting or convulsions or other cerebral or meningeal symptoms. Cough is absent since the bronchi are not involved; no sputum appears, and pain from the third to the fifth year, or, indeed, later, and also in adults, is referred to the abdomen, but without tenderness there. Pain is more important than increased respiration, which occurs with any elevation of temperature. Respirations number 80 under two years; in older children 50 or over. Crepitant râles are usually absent because of the superficial breathing caused by pain. Latency of signs is sometimes noted, as no bronchial breathing, no bronchophony, no dulness. Localization is more often central, in the upper lobes or migratory. Lysis is more frequent than in adults. In children pneumonia may be mistaken for abdominal disease, for pleurisy, or brain affections. In alcoholics the disease is insidious, often without pain, cough or sputum, etc., and the lung symptoms may be overlooked, since the clinical picture of delirium tremens masks the signs of pneumonia.

Pneumonia secondary to tuberculosis, emphysema, arteriosclerosis, hepatic cirrhosis, nephritis, diabetes, typhoid, influenza, diphtheria, anesthesia by ether, etc., is most frequently overlooked, and the greatest care in chronic cases is necessary. Sudden death here, and in general, is often pneumonic. Of other variations in the clinical course, the author mentioned the rarer forms, as abortive pneumonia, ephemeral pneumonia, relapsing or recurrent pneumonia. He discussed delayed or imperfect resolution; also local variations; massive pneumonia, etc., and as a final general statement he said that few diseases are recognized as easily as is fibrinous pneumonia, when careful consideration is given to its onset, symptoms, signs and evolution, and when no symptom of pneumonia presenting, the patients with other disease are carefully, systematically and repeatedly examined.

**Treatment of Pneumonia.**—In discussing the previous paper, Dr. James B. Herrick referred particularly to certain erroneous practices in the treatment of pneumonia, and argued for a simpler therapy and less free use of drugs. The expectant and symptomatic treatment was, for the present, seeing no specific remedy is known, the only rational one. The physicians can educate the laity to a knowledge of the self-limited nature of pneumonia, and a treatment as scientific as that in typhoid will be possible. He urged that oxygen be allowed to come in through the window, and not given entirely from the tank. No hard and fast rule as to diet should obtain; there should be individualization in this regard. Alcohol was seldom necessary. Hydrotherapy was proper for the reduction of temperature. Salt solution was of value, but its use ought not to be deferred until the patient is *in extremis*. Morphine was the best remedy to relieve pain and induce sleep, though it should, of course, be used with caution. Local applications were of doubtful value. They should not be so heavy or so light as to embarrass respiration. Bleeding was occasionally of benefit. The giving of many drugs for each trifling symptom was not indicated, and was often harmful. There was danger in the too free use of stimulants.

## CANADA.

**Appointment.**—Dr. J. M. Elder, Montreal, has been appointed by the Board of Governors of McGill University, Associate Professor of Surgery and Lecturer on Clinical Surgery in the medical department of McGill University.

**Montreal Physicians to Speak in Churches.**—It has been arranged by the Protestant Ministerial Association of Montreal that meetings shall be held in the Montreal churches in May, which will be addressed by leading physicians of that city on the subject of tuberculosis, and how best to prevent its spread.

**Medical Inspection of Schools in Montreal.**—Dr. C. H. Church, of Montreal, recently read a paper on "Montreal Schools and the necessity for medical inspection of them," before the Social Science Department of the Women's Club of that city, in which he advocated medical inspection of the city schools, as after paying a visit of inspection to each of them, he had found conditions present both dangerous and unsanitary. Referring to one school where there were 600 boys belonging to the laboring classes, "a more disgusting place," said the doctor, "I never entered." As the opportunity generally presents itself during a professional career of a doctor entering some pretty "tough joints," the conditions present in the schools of Montreal must be very bad, indeed.

**Contagious Diseases Hospital in Montreal.**—Notre Dame Hospital, Montreal, which has agreed with the Montreal City Council to care for all cases of infectious diseases arising in the French quarters, has selected its site, which embraces 52,000 square feet, and which cost $15,000. The Board of Management of the Notre Dame Hospital is to receive from the City Council the sum of $15,000 annually for the purpose of maintaining this new institution.

**An Academy of Medicine and Doctor's Club for Toronto.**—For some time past there has been a movement among the progressive physicians of Toronto looking towards the amalgamation of the existing medical societies, the Toronto Clinical Society, the Toronto Medical Society, the Toronto Pathological Society with the Ontario Medical Library Association, and the establishment in connection with an Academy of Medicine, of a doctor's club. As several prominent practitioners in Toronto are interesting themselves in this laudable undertaking, the proposal will no doubt meet with success. It is understood that a fine residence in the centre of the city is being negotiated for, and that decided action will shortly be taken.

**Canadian Medical Association.**—The thirty-sixth annual meeting of the Canadian Medical Association will be held this year in London, Ontario, under the Presidency of Dr. Walter H. Moorhouse of that city. The dates selected are August 25, 26, 27 and 28. Dr. James Stewart of Montreal, Professor of Medicine in McGill, will deliver the Address in Medicine; Dr. Alexander Hugh Ferguson, the Address in Surgery, and Dr. Matthew D. Mann, the Address in Gynecology. Arrangements are said to be getting well in hand at this early date, and it is expected that this year's meeting will equal if not surpass all other previous meetings.

**Ontario Medical Association.**—The annual meeting of the Ontario Medical Association will be held this year in Toronto on June 16, 17 and 18. Dr. J. C. Mitchell, Toronto, is the President, and Dr. H. C. Parsons, Bloor St. W., the secretary. Dr. Musser of Philadelphia, and Dr. Thos. Cullen, Baltimore, are to be present and contribute papers. Papers and business are to be in charge of Dr. W. P. Caven, Toronto, while entertainment and arrangements are to be in charge of Dr. Bruce L. Riordan. During the meeting there will be a discussion on arteriosclerosis. This will be the first meeting of the Ontario Medical Association of three days' duration.

**Dr. William Bayard, St. John, N. B., Honored.**—Very recently, Dr. William Bayard, of St. John, N. B., one of the oldest medical men in Canada, severed his connection with the St. John Public Hospital after a service extending over 40 years. The municipal council of that city took occasion to present to Dr. Bayard as a tribute of regard and public esteem, a resolution handsomely engrossed on parchment. Dr. Bayard was graduated 65 years ago. He is a past president of the Canadian Medical Association.

**Obituaries.**—Dr. D. Gilbert Gordon, Professor of Hygiene in Trinity Medical College, Toronto, died at Johns Hopkins Hospital, Baltimore, on Jan. 28, of tubercular peritonitis. Deceased, who was in the prime of life, enjoyed an extensive practice in Toronto, and was a past president of the Toronto Medical Society. He was formerly a master at an Upper Canada College, and held the degree of Bachelor of Arts from Toronto University. He was an M.D., C.M. of Trinity University.

Dr. Andrew Halliday, associate professor of pathology in the Halifax Medical College, died on March 10, from tuberculosis. He was only thirty-six years of age, but was considered one of the bright medical minds of Nova Scotia.

## GENERAL.

**Missouri State Medical Association.**—The next regular meeting of this association will meet at Excelsior Springs, April 21, 22, 23. A large and interesting program is planned.

**Florida Medical Association.**—The thirteenth annual meeting will be held at St. Augustine April 8, 9, 10. An interesting program is presented. Dr. McCormack will address the association on the Reorganization of the Medical Profession.

**Fourteenth International Medical Congress.**—The French railroads have made their rate reductions for the members of the International Medical Congress depend on a special certificate, and on the use of the same route for going and returning. Any member of the Congress to whom this is of interest should therefore write immediately to the Secretary General at Madrid, stating at what port he expects to land, and what route he will take. The Secretary-General will send to him at the port named under the address *poste restante*, the necessary certificate.

**Insurance of X-Scientist.**—Richard A. Robb, a Christian Scientist, died a month ago of jaundice. The proofs sent to the Supreme Court of Foresters for the widow's claim under his $1,000 policy showed that although he was seriously ill for two weeks a physician did not attend him until the day before his death. The Foresters have rejected the claim under the section of their constitution which withdraws the benefits of insurance from any who neglect to procure or refuse to receive medical aid.

**Woman's Brain.**—In a recent letter to the *Sun*, we find: "In your issue of March 22 there is an article entitled 'Man's Superior Brain.' The caption is a misnomer, for on reading the text of the despatch from London thus proudly headed, we discover that the claim is not that man's brain is really superior to woman's in any way except in weight. Prof. Marchand of Marburg, who sends forth the valuable information that even in childhood the brain of the masculine human being is of more weight than that of his sister, has examined more than a thousand cases—always with the same result. If he had made an equally painstaking comparison of the feet of the male at all periods of life he would undoubtedly have discovered that the average weight of the masculine extremities was greater than that of the Cinderella sex.

"We have always understood that it was the quality and not the quantity of the brain that indicated mental power, and that the preponderance of the finer gray matter was greater in the average feminine than in the average masculine cranium. There is one vital consideration that must always be remembered in comparing the brains of the two sexes, and that is that while many of the greatest men have bequeathed their skulls to the investigation of science and thus the brains of Cuvier and of Carlyle and of many other distinguished persons have been examined and analyzed, thus far the feminine brains available for study have been those of women who died in the hospitals, often the outcasts and refuse of the sex. Could the brains of George Eliot, of Harriet Martineau and of other women like them have been critically considered we should have some new light on the question of the superiority of the feminine or the masculine sensorium.

"It is said that in ancient times when the lower animals and men could converse together, an artist who had just completed a picture which displayed a lion prostrate at the feet of a man asked a friendly lion who was passing to come in and view his masterpiece. The king of beasts considered it for a few moments gravely, and then said: 'Just wait till lions paint pictures.' It is possible that in some future day when women are permitted to have equal facilities with men we shall find a distinguished feminine scientist proclaiming to the world that the unnecessary amount of white matter which clogs the male cerebrum accounts for the stupid or 'fat-witted' condition of many masculine minds.

"Even among men it has not always been the 'big head' that has contained the most valuable amount of intellect and the compact occiput of a Jefferson, a Grant or a Platt may contain brains of more value than many a dome-like brow belonging to the unknown of their generations. It is a fact that should by this time be conceded, that superiority of mental ability does not belong to either sex alone, but that women and men as they suffer or enjoy alike the hardships or the pleasures of life are in like manner gifted or deficient in their mental characteristics."

**Healing by Prayer Lawful in Old North State.**—Christian Scientists all over the country say that there was a great victory for their cult in the defeat last week in North Carolina of an attempt to prevent by law the practice of faith-healing in the State by Christian Science practitioners. The bill as drawn up at the request of the State Superintendent of Health, who had the support of the majority of the medical profession of the State, sought to do this by defining the practice of medicine and surgery to be the treatment for fee or reward of any cases of disease, "physical or mental, real or imaginary," with or without drugs, surgical operation or by any other method whatsoever, and prescribing the usual qualifications of physicians as those necessary to obtain a license so to practise. The purpose of the bill was defeated after one of the hardest fights yet made by Christian Science by the adoption as an amendment of a provision specifying that the act should not apply "to any person who ministers to or cures the sick by prayer to Almighty God without the use of drugs or material means."

**Obituary.**—Dr. Robert Safford Newton died last Monday after a brief illness. Dr. Newton was in excellent health up to last Friday. He attended a dinner party last Thursday evening and the next day became ill. Physicians were called, and what at first was thought to be an attack of the grip developed into spinal meningitis. Dr. Newton's condition grew steadily worse and the end came soon after one o'clock yesterday morning. Dr. Newton was a bachelor. He was born in Cincinnati, Ohio, and was forty-five years old. His sister, Mrs. Mary Potter, made her home with him. He was a well-known alienist. He testified as an expert in the Barberi and the Hannigan murder trials, as well as in the Molineux case.

# CORRESPONDENCE.

## OUR VIENNA LETTER.

(From Our Own Special Correspondent.)

Vienna, March 14.

The event of all recent events in the medical world of Vienna has been the lecture which was delivered by Prof. Behring upon "The Struggle against Tuberculosis." Not quite ten years previously Behring had made his earliest announcement regarding his discoveries in the treatment of diphtheria before an audience of scientists in this same city—strange to say, far from the borders of the fatherland in which his work was accomplished. Behring recalled this fact to his hearers with something of emotion; that was at a time when the ideas of the medical world upon the subject of bacterial toxins and antitoxins were very largely inchoate and nebulous, when the attitude of the most scientific men toward the problem of immunization and antitoxinization was prejudiced and pessimistic. Even Behring himself had not come to regard his achievement in the light of an incontestable and proven fact. Yet in those early days his Vienna audience greeted his tentative announcement almost with an ovation. During the succeeding months of trial and probation, he received his warmest support and encouragement from the members of the Vienna school, among whom he touchingly referred to Widerhofer, since deceased. To-day all this is changed, and v. Behring stands before the world, in the words of Prof. Schrotter, a conqueror; the practical value of the diphtheria antitoxin is established, and the reputation of its discoverer is far beyond cavil. But Behring had not forgotten, and accepted with alacrity the invitation of v. Schrotter, to describe his work and his theories, in so far as they bore upon the treatment of tuberculosis in mankind. It was generally expected that the lecture would prove epoch-making, nor was the hope disappointed. The amphitheater of the clinic was packed to double its capacity, with Hofraths, professors, docents, and students, and as many more were turned away in disappointment. In the audience we recognized Neusser, Nothnagel, Lorenz, Weichselbaum, Paltauf, and the venerable old dean, E. Ludwig. Prof. v. Schrotter, the chairman, introduced the speaker of the evening in a few words of praise, which was none too fulsome; Behring himself was greeted with round upon round of applause, the audience standing up in its enthusiasm. He looked a very young man, by no means the fifty years which stand to his credit, and had the grace and strength of a military bearing. He spoke in rather a low voice, and very deliberately and slowly, as though to weigh every word of his discourse. The substance of his lecture was as follows:

Von Behring began by deprecating the fact that he had been heralded as the discoverer of a "serum" potent against tuberculosis. In 1901, he had, indeed, delivered a lecture in Stockholm upon "Methods of Combating Tuberculosis in Cattle," but had laid no claim to the discovery of a specific serum. In fact the trend of his theories has had an entirely different direction.

He then passed on to a review of his work upon the immunization of cattle, which he said might practically be regarded as completed. The immunizing material, the preparation of which has already been described, is obtained from cultures of the human bacillus, and is injected into the cervical vein of the cow. The dose ranges from 4 to 10 milligrams. Behring made the observation that various animals responded very differently to the same dose of the toxic material. Calves of four weeks rarely evinced any reaction; animals of the age of seven months and over occasionally developed fever and general constitutional symptoms, which were not clinically of any great severity. After the age of one year the reaction might be severe in the extreme, with clinical and pathological evidence of the involvement of the important viscera. Von Behring stated that these results were closely comparable with those obtained by the injection of tuberculin of Koch in which a reaction to small doses is indicative of the existence of tuberculous focus within the body. In the case of the toxic material employed by him also, it had practically been proven, both experimentally and pathologically, that reaction denoted the existence of a previous focus of infection. At all events, the actual deduction to be drawn from the facts as hitherto collated was, that immunization should be practised upon animals ranging in age from one to three months. And in fact, this practice had met with all success, and seemed to be associated with no danger.

The calves which were treated in this manner were subsequently tested in comparison with other control cattle, and evinced a marked immunity to tuberculous infection. The nature of this immunity is an extremely important matter. It is not due to the existence of antitoxins in the sense in which that word is used of diphtheria. It is well known that in the latter disease, the symptoms are in greater part due not to the bacteria per se, but to the action of the toxins which they set free in the circulating blood. The diphtheria antitoxins, whether spontaneously elaborated by the organism or artificially introduced from a foreign source, serve only to bind or neutralize these toxins. In tuberculosis, as in many other infections, it is not only the toxin but the organism itself which must be combated, and it seems extremely probable that the cattle immune to tuberculosis possess within their bodies, in all probability in the circulating blood, substances inimical to the growth and existence of the tubercle bacillus, as well as related to the poisons which it produces. The immunization of calves is a settled problem; that of human beings is, however, an entirely different affair. It is extremely improbable that men will even consent to the immunization of their offspring by the injection of attenuated cultures of bacilli, or of anything of the sort. There is, however, a very different method of surmounting this difficulty. By analogy with recent observations in connection with other sorts of antibodies and antitoxins, we are entitled to assume that the immunizing material is to some extent excreted in the milk of the primary individual, and is therewith transmissible to the offspring, thus achieving a secondary immunity. If then the human nursling were to be nourished in whole or in part on the milk of immunized cows, it seems not unreasonable to believe that it would come to share the immunity of its foster parent. This is a theory the test of which will, however, demand a vast multiplicity of observations and years of time. One fact, at all events, is clear, and this is, that the period of infancy is the time during which, if at all, the human being will have to be put to the test. For not only is it probable, from our past experience with animals, that the more mature individuals will prove refractory to the process, but we are confronted by the fact that we must overcome the appalling mortality from tuberculosis in infancy. We are not to believe that this mortality is due to an inheritance of the disease, perhaps not even to an inherited predisposition to it. Probably the sole factor at work is the transmission of the disease to the infant from its mother, or other affected individuals with whom it comes in contact. Particularly the infant is exposed to the baneful effects of such contact. Nor is it possible, by any means in our power, entirely to offset the effects of such contact. They may be diminished, but never overcome by the careful antiseptic measures which have recently been so wisely disseminated. The treatment of the disease itself, once it has taken hold of the body, has also progressed wonderfully within recent years; witness the spread of the sanitarium movement in Europe, but it also holds out no hope of ever eradicating the terrible disease. Once and again, it is only through the possession of an antitoxin that the race can expect to make a successful attack upon this, the most terrible of its foes.

After the applause had subsided, Prof. v. Schrotter thanked v. Behring and referred briefly to the sanitaria treatment, with which the lecturer had associated his name. Prof. Nothnagel then proposed that Behring be elected an honorary member of the Society by acclamation, notwithstanding the fact that this procedure was not in conformity with its regulations. Needless to say, there was a furious consensus of opinion upon this motion. Prof. v. Behring was visibly affected, and expressed his thanks and appreciation. The meeting closed amid much congratulation.

## TRANSACTIONS OF FOREIGN SOCIETIES.

### German.

PROGNOSIS OF FRACTURES OF THE SKULL—RESULTS OF PLASTIC TENDON SURGERY, WITH SPECIAL REFERENCE TO THE PROCESS OF TENDON REPAIR—THE REFLEX PATH OF TAKING COLD AND OF THE TEMPERATURE DISTURBANCE CONCERNED WITH IT, WITH MICROSCOPICAL DEMONSTRATIONS—TUBERCULOSIS IN FOODSTUFFS.

Herr GRAF, at the Society of the Charity Physicians in Berlin, Feb. 5, 1903, read a paper on the Prognosis of Fractures of the Skull, and among other things, said that in the last seven years there had been observed in the clinic of Prof. Koenig, 90 examples of fractures of the base, 31 per cent. of these died. Forty-eight individuals in all presented themselves for later observation. Of this series, nine have remained, up to the present time, entirely without symptoms; 10 had various slight symptoms and had been incapacitated from following their vocation to some extent; 12 belonged to the class who suffer from distinct symptoms, and were limited to a very moderate capacity for work; and, finally, 17 had extreme degrees of sequelæ, and were totally prevented from following their vocation. Among them all, the chief complaints were headache, dizziness, roaring in the ears, weakness of intellection, very frequently decrease in power of initiation. Two were the victims of dementia, and two of paranoia. More frequently the changes in the brain wrought such symptoms as irritability and a muttering, whimsical disposition, and the development of a melancholic tendency. In one subject a tendency to suicide was observed. In about 50 per cent. of all the cases, disturbance in hearing were observed, and of these, 12 showed signs of damage to the labyrinth. The cause of this damage to the hearing seemed to most of those who examined the patients to be due to damage to the brain substance itself either in the cells of hearing or in the paths of hearing.

Herr BORST, at the Physical and Medical Society in Würzburg, Jan. 10, 1903, read a paper concerned with the process of Tendon Repair after Plastic Operations upon them. After a short review of the literature concerning the regeneration of tendons after division of them and after simple suture, and also during the course of inflammation of tendons, the speaker reviewed his own observations concerning the processes of tendon repair after operative interference with them. These cases he had noted in the clinic of Hoffa, in 11 individuals. These notes he desired to add to the paper of Hoffa already published in 1901, in the spirit of a continuation of the discussion. Final and accurate examination of the individuals concerned, Borst has at the present time completed, and brought before the Society a large number of microscopical preparations and drawings concerning his results. In addition to the experiments of Hoffa, namely, transplantation of one tendon upon its neighbor, lengthening of tendons by a Z-form incision, and abbreviation of tendons by the folding process of Lange and others, Borst has carried the observations further and made a number of tests on dogs, cats, rabbits and frogs. These experiments concern (1) transplantation of tendons upon neighboring tendons; (2) folding after the method of Lange; (3) resection of tendons with suture of the stumps upon neighboring tendons; or with liberations of the stumps in order to investigate the influence of tension upon the functional regeneration of the tendon; (4) local irritation of tendons with nitrate of silver in substance and in 10-per-cent. solution, with the rubbing of soot into the points thus irritated; (5) transplantation of resected tendons into the subcutaneous tissue. Microscopical preparations taken from experiments on dogs and cats by Hoffa were made 14, 24, 42 and 64 days after operation, with the one exception of a preparation from a man, namely the shortening of a tibial tendon by Lange's method, which was secured 242 days after operation. Borst made his series of microscopical preparations 14 days after operation, and thus aimed to complete the original series of Hoffa. For a brief review of the subject Borst's paper was only partially adapted. The subject in detail is treated in an article in *Ziegler's Beiträge zur pathologischen Anatomie,* Band 34.

O. KOHNSTAMM, at the Society for Internal Medicine, in Berlin, Jan. 26, 1903, read a paper on the Reflex Path of Taking Cold, and of the temperature disturbance concerned therewith, and presented microscopical specimens. He stated that the origin of cold was twofold; the physiological, which, through disturbances of external cold brought about a change in the distribution of the blood and the pathological, which usually concerns becteria, which, according to the individual tendency of the patient, in one case belonged more to one kind, and in another case, to another kind of bacteria. Thus, it is known that some patients, after having taken cold, react regularly with either coughing or sneezing. It is of some interest to determine the path through which the influence of external cold operates and through which the second reflex alteration in the blood vessels travels. The example of sneezing and coughing makes one suppose that this influence of external cold affects chiefly the physiological condition of the breathing center. It is not only through anatomical observations by the author, but also by clinical investigations in unilateral paralysis that he is able to regard as established that the path of temperature and pain passes in the anterior commissure about in the level of the corresponding routes, then cross, and finally pass lengthwise along the anterior commissure in the antecollateral part of the spinal cord, and somewhat obliquely as they pass upward toward the middle bundle of Gower's tract. From these they further ascend in the antecollateral marginal tract of the same column. The reflex fibers of this system end for the most part in the cerebellum; a part of them, however, which leads to the cerebrum end in the terminal part of the temporal system, as fibers of Edinger in the optic thalmus. A further part of this system ends in the *formatio recticularis grisea,* where it breaks up into terminal twigs. In this *formatio* there lies, however, the physiological respiratory center of Gads, with which these paths of temperature just described come into close anatomical relation. He discusses two clinical cases in which zones of softening in the *formatio* existed, and in which a gross paralysis of sensation occurred, so that the paralysis of sensation was present in the trigeminus in the same side but in the opposite side of the trunk.

In the second of these two individuals the author could establish a decrease in the cold sensation and in the pain sensation, but not in the perception of warmth and of contact. The anatomical arrangement cited above illustrates the relation between disturbance by external cold and the breathing center. At present there is wanting only the centrifugal part of the reflex arch. For this the author referred to a disturbance of the sympathetic centers in the medulla oblongata, namely, of the dorsal vagal nuclei of the lower salivatory and of the upper salivatory nuclei, concerning which latter he is to publish notes and further also of the terminal nucleus of the trigeminus and of the vagus. The centrifugal impulse probably from these points excites a vasomotor dilatation in the peripheral distribution, if the opinion of Bayliss concerning the centrifugal paths in the sensible terminal neuron is at all likely.

VON HANSEMANN, at the Berlin Medical Society, Feb. 4, 1903, read a paper on Tuberculosis in Food Stuffs. After referring to R. Koch's well-known dictum, delivered before the Congress on Tuberculosis in London, concerning the difference between human and bovine tuberculosis, and also after stating Koch's publicly uttered wish in the University Clinic that all cases of primary tuberculosis of the intestinal tract caused by foodstuffs should be sent to him, the speaker discussed several cases of primary tuberculosis of the intestine which he had seen during the past seven years. He stated that the demand of Koch that such cases should be beyond doubt caused by foodstuffs was difficult of fulfilment, and that Koch's comparison between tuberculosis of the intestine of this origin and typhoid fever and cholera is hardly fair, because between the time of infection and the appearance of the lesion of the disease in the case of tuberculosis was altogether too long. Pathological anatomy may only establish a site of entrance for tuberculosis, but could not prove the manner in which the virus had reached this point. In averaging up his material, Von Hansemann had found exactly the same number of primary tuberculosis of the intestine as had Virchow in his turn cited in reply to the statements of Koch, namely, three or four each year out of about 1,500 autopsies. During the past seven years, then, Hansemann has seen 25 cases of primary tuberculosis of the intestine. These he discusses, very briefly, in detail, as follows. Most common among them were children or patients who had been sick for a long time of such diseases as cirrhosis of the liver, renal conditions, and the like. Among hepatic cirrhosis he saw four cases of peritoneal tuberculosis without any known entrance for the germs. From this he deduces the supposition that the tubercle bacillus may pierce the walls of the intestine without causing disease therein. The cases of intestinal tuberculosis concerned in part various small lesions in the intestines. and in part various stages of recovery. A few showed very severe results, but never any disease of the lungs. The latter condition he has not been able to establish anywhere in literature. From this he concludes that tuberculosis in the upper part of the intestinal tract, especially tuberculosis of the tongue, is much more common than in reality has been supposed. He has himself found nine cases of this kind which were confused with cancer. Primary tuberculosis of the tonsils he had found only once, but secondary tuberculosis of these glands is comparatively common. One reason why tuberculosis of the intestine is comparatively rare, the speaker stated to be the resistance of this tract to the germs. This is proved by the fact that children, although they are frequently affected with tuberculosis of the lungs, are very rarely the victims of tuberculosis of the intestines, although probably, for the most part, they swallow their sputum. Among 40 children of this description, he found tuberculosis of the intestines 16 times. The skin, also, seems to possess rather distinct resistance. Even tuberculosis innoculated from cadavers is apt to remain localized. Thus, with tuberculosis in the intestinal canal, proceeding from food, no matter whether its primary origin was in man or in animals, the outcome may be favorable or unfavorable. On the other hand, however, it appears rarely or never to lead to tuberculosis of the lungs, and in this last dictum he is in agreement with Prof. Koch.

## STATE TUBERCULOSIS HOSPITAL.

*To the Editor of the* MEDICAL NEWS:

DEAR SIR: I write you briefly with relation to the present status of the New York State Hospital for Incipient Tuberculosis. After some considerable discussion and division of opinion as to propriety, the site at Raybrook in Essex County was selected for the Hospital. Preliminary appropriations by the legislature have permitted the Board of Trustees to purchase a site, provide for the erection of an administration building and sufficient power, water supply and equipment for the same. The appropriation was found insufficient to carry out the plans of the hospital originally contemplated, therefore it became necessary for the Board of Trustees to appeal to the present legislature for an additional appropriation, this appropriation to cover the expense of the erection of two pavilions accommodating 56 patients each, in addition to the quarters already provided for by the original appropriation. In order to make the work of the hospital effective, satisfactory or representative, it is necessary to secure the appropriation for these two additional pavilions. If such an appropriation can be secured, a model hospital for the treatment of tuberculosis can be completed representing a unit and a general plan generally conducive to the best hospital construction for the treatment of incipient tuberculosis. It is hoped by the Commission to present to the medical profession at large at an early date, a general synopsis of this plan for their consideration. The plan in so far as completed has the endorsement of a considerable number of directors of hospitals for the treatment of tuberculosis abroad and has been revised from the criticism of a number of hospital architects of this country. The general plan has many salient features which cannot be enumerated without fullest description touching upon hygienic conditions, the prevention of infection and the destruction of the immediate manifestations of the disease.

Trusting that you may be able to give notice to this matter, I am, very sincerely yours,

W. G. MACDONALD.

## SOCIETY PROCEEDINGS.

### NEW YORK PATHOLOGICAL SOCIETY.

*Stated Meeting, held February 11, 1903.*

**Rupture of the Aorta Due to Carcinoma of the Esophagus.**—Dr. George P. Biggs presented a specimen of rupture of the aorta due to carcinoma of the esophagus. This specimen was removed from a female, aged forty-four years. For three months prior to admission to the hospital she was unable to swallow solid food, and only small quantities of liquid. Previous to that, for a year there had been nausea and a great deal of intestinal trouble, without any vomiting. She had lost slightly in weight during the previous six months. Examination by the bougie showed fairly marked stricture of the esophagus, twelve inches from the line of the teeth. Shortly after admission, gastrostomy was performed and a bougie one-half inch in diameter passed through the stricture from below, obstruction being first encountered 3½ inches from the cardiac orifice.

There was a little improvement in the power of deglutition following this, but about two months later it was again noted that there was inability to swallow anything but small quantities of liquid. The fistula into the stomach was kept open and nourishment was administered in that manner. Three months after operation, during one entire day, there were frequent small hemorrhages from the esophagus. The dressings about the abdominal wound became thoroughly saturated with blood, and the evening following a very large hemorrhage death resulted. On post-mortem examination the stomach was found greatly distended with blood. A smaller quantity of blood was found in the small intestines and in the bronchi. The growth in the esophagus was rather extensive, beginning on a level with the bifurcation of the trachea, and involving the entire circumference for a distance of eight centimeters below that point. There was apparently no marked stricture at this time, but a very extensive ulceration of the entire involved area.

A little below the center of this ulcerated area, was found a small opening leading directly into the aorta, communicating with its interior by an opening about two millimeters in diameter. The site of this communication as viewed from the aorta was further marked by a thrombus 1½ cm. in its greatest diameter, with a very small base of attachment near the opening.

The tumor was rather of a scirrhus type of carcinoma. A section was taken from a point not very near the perforation in order not to destroy the specimen. There was but very little inflammation, and no necrosis except very superficially. The speaker had not seen such a specimen of complete invasion of an artery of very large size by any new growth, though they were occasionally found in large veins. In no other case had he seen evidence that death was due to extensive hemorrhage following erosion of a large vessel by a new growth. Without previous knowledge of this case the final symptoms would have suggested rupture of a thoracic aneurism.

The other case about which he wished to speak was a pistol-shot wound of the skull, without any injury to the dura, but with laceration of the pia, resulting in death. The case was that of a man fifty years old, who shot himself in the upper portion of the right temporal region. The size of the ball could not be determined. It had been removed at operation. There was a depressed fracture at the point of contact of the bullet, and the man was comatose when admitted to the hospital. The bullet was found just beneath the scalp, a short distance from the point of entrance. All fractured bone was removed and the dura was found to be uninjured apparently, though no distinct pulsation was noted. The conditions did not seem to warrant further exploration. There was no material improvement after the operation, and the man died a few hours later. At the examination of the wound post mortem, the dura was found entirely uninjured, so far as any gross inspection could show. It was very tense, owing to a very large subdural hemorrhage causing marked pressure, and apparently being the immediate cause of death. In the pia, just beneath the central portion of the fractured area in the skull, was a linear tear 1½ cm. in length crossing one of the main branches of the middle cerebral artery. The convolution beneath this point of laceration of the pia had its normal contour, and was not damaged so far as examination of the exterior could reveal, but upon incision, a large number of small petechial hemorrhages were found in the gray matter. The case was to the surgeons, evidently, rather unusual, as they did not think it necessary to go further after finding the dura uninjured. The blow of the bullet made a degree of pressure sufficient to tear the pia without producing any visible damage to the dura.

The third specimen was one which was of interest as a very unusual thrombosis of the left ventricle. It was from a male, aged forty-two years, who first came under observation during an attack of typical uremic coma which developed while at work. During the 69 days at the hospital, he was in a more or less comatose state. Death was expected almost any day during the entire time. The urine and general symptoms were such as to make it very clear that it was a case of contracted kidney. The autopsy revealed lesions which would make a good nucleus for a pathological museum in the way of changes more or less closely related to kidney lesions, including extensive thrombi. One of the latter was in the apex of the left ventricle. It was a pear-shaped thrombus attached by its small end to the very apex of the ventricle at two points, one of them a mere thread, the other an area of about one centimeter by one-fourth centimeter, the large end of the thrombus projecting perfectly free within the ventricle. It was of the firm, white variety and measured about 4½ cm. in length, and 2¼ cm. in greatest diameter. Attached to the anterior wall of the left ventricle above the apex was another smaller thrombus 1 cm. in diameter, one-fourth cm. in thickness, which had been distinctly flattened by the larger one. One kidney, weighing 3½ ounces, was exhibited with the heart.

**Endocarditis.**—Dr. E. Libman presented some interesting cases of endocarditis:

*Case I. Staphylococcemia in a Case of Chronic Endocarditis.*—The patient from whom the specimen was obtained was a man aged thirty-six years, who was admitted into the Mt. Sinai Hospital in Dr. Brill's service, with symptoms of aortic insufficiency and mitral stenosis. For about ten days he had had very slight temperatures; on the eleventh day the temperature rose to 106° F., and he developed petechiæ on the surface of the body and on the mucous membranes. A blood culture made the following day showed the presence of the *Staphylococcus aureus* in large numbers; two days later the blood showed the same organism. The temperature continued quite high, and the man died in about twelve days after the onset of the acute symptoms. The post-mortem examination revealed an aortic insufficiency and a mitral stenosis, as had been suspected during life. There were no acute lesions of the valves except for a few very minute vegetations on the edge of the aortic flaps. On the endocardium, just below the posterior aortic flap, there was a deposit of fibrinous material measuring 1½ by 2 cm. in width and length, and about one-eighth inch in thickness. There were innumerable miliary abscesses in the kidneys and heart muscle, and infarctions in the kidneys and spleen; areas of acute interstitial myocarditis were also found. The cultures from the heart blood post mortem revealed *Staphylococcus aureus*, pure, and the same organism was isolated from a number of metastatic abscesses. The fibrinous-looking area on the endocardium, on microscopic examination, proved to be made up almost entirely of staphylococci. The metastatic abscesses showed staphylococci in spreads.

The point of interest about this case was that, although the case was one in which a clinical diagnosis could easily have been made of ulcerative endocarditis involving the already diseased flaps, these were found practically negative at post mortem. The case demonstrated very well the importance of being careful before making a diagnosis of ulcerative endocarditis even in the presence of distinct physical signs of disease of the valves.

*Case II. Fatal Rupture of a Pulmonary Adhesion in a Case of Mitral and Aortic Stenosis.*—This heart came from a woman, thirty-six years of age. Several days before admission into the hospital (Dr. Brill's service) she was taken sick suddenly with pain in the right chest and went into collapse. On admission into the hospital she was almost pulseless and very pale. The clinical diagnosis was mitral stenosis, thrombosis of the auricles and effusion in the right chest. On aspirating the chest, fluid blood was obtained. It was suspected that the patient was suffering from a ruptured infarction of the lung.

The post-mortem examination revealed the following: The aortic orifice was almost completely stenosed; the mitral orifice barely admitted the end of a lead pencil; there were thrombi in the auricles; the right pleural cavity contained a large amount of blood. On the inner surface of the sixth rib there was found a firmly attached small strip of lung tissue. On careful examination it was found that there had been a firm adhesion between the lower part of the right upper lobe of the lung and the chest wall, and that the hemorrhage into the pleural cavity had come from a rupture of this adhesion. In the part of the adhesion attached to the lung was found a torn varicose branch of one of the pulmonary veins, so that, although the clinical diagnosis of thrombosis in the auricles was proven to be correct, the hemorrhage into the pleura had nothing to do with the existence of these lesions.

*Cases III and IV. Acute Endocarditis of the Aortic Valve with Perforation into the Right Auricle.*—These two hearts illustrated a special point. The first case was that of a girl, aged eighteen years, who became profoundly septic after a slight injury to the right wrist joint, resulting in osteomyelitis of the ulna. There were numerous chills followed by very high temperatures, and a marked progressive anemia. No petechiæ were found anywhere. Within the course of two weeks there was developed a distinct aortic insufficiency. The first blood culture showed no organisms. In the second culture 25 cm. of blood were used, and the *Staphylococcus aureus* was found pure. It is interesting to note that the organisms were so few in the blood that they were found in only one flask of bouillon (four plates of glucose-agar had been used and three flasks of glucose-bouillon) and in this flask they were found only after three days. Dr. Libman said that he hesitated in agreeing with the clinical diagnosis of ulcerative endocarditis until the organisms had been found in the blood, because in cases of acute ulcerative endocarditis he had always found organisms in the blood.

On post-mortem examination there was found vegetative endocarditis of both posterior flaps of the aortic valve; the infectious process had extended through the wall of the heart and there was a perforation into the right auricle just between two of the flaps of the tricuspid valve; there were firm vegetations around the place of perforation. The extension into the auricle had started from the posterior inferior part of the right sinus of Valsalva. The heart blood, post mortem, was found to contain a pure culture of *Staphylococcus aureus* and staphylococci were found in the spreads made from the vegetations.

The fourth heart is from a woman, aged thirty-two years, whose symptoms were those typical of ulcerative endocarditis. There was present an aortic insufficiency and mitral stenosis. There is a marked vegetative endocarditis involving the aortic valve, and a perforation into the right auricle in the same position as in the third heart. In this case the streptococcus was cultivated from the blood during life and post mortem. These two cases should properly be classed as endomyocarditis, for the myocardium is as much involved as the valve. They illustrate very well a point recently made by Krauss. In a recent article in the *Berlin. klin. Wochenschrift* he pointed out that the right sinus of Valsalva is a *locus minoris resistentiæ.* Aneurisms and perforations are particularly apt to occur in this sinus. Krauss points out that if the aneurismatic process involves the upper anterior part of the sinus, rupture is apt to occur into the right ventricle just at or below the origin of the pulmonary artery, but if the aneurismatic process involves the posterior inferior part of the sinus, the perforation is apt to occur into the right ventricle just beneath the tricuspid valve in the situation of the so-called pars membranacea of the septum, or into the right auricle between two of the flaps of the tricuspid valve. The speaker said that he had brought with him a heart which he showed to the Society two years ago, which showed a compression of the conus of the pulmonary artery, due to the inflammatory swelling in the septum secondary to an ulcerative endocarditis of the aortic flaps and the sinuses of Valsalva. In this case the most marked ulceration was found in the upper anterior part of the right sinus of Valsalva.

Dr. Ewing said that he had been very much interested and surprised to find in such a considerable proportion of the cases staphylococci appearing as causes of the lesions. In his experience in examining blood in cases of bacterial endocarditis, he had found the streptococcus and never the staphylococcus. He asked whether the cultures were made before or after death. If before death, how long before, and if they had not been obtained before death—say twenty-four hours—what relation Dr. Libman regarded that they must have with the lesion itself, and how they were to be separated from secondary infections.

Dr. C. W. Field said that at the Presbyterian Hospital they had found that the blood cultures taken by the House Staff showed contaminations in about fifty per cent. of the tubes which showed any growth. In spite of careful asepsis, contaminations will occur. Dr. Tuttle threw out any case in which he found staphylococci. In many cases some staphylococci from the skin were found. Dr. Field thought that in the last case in which one staphylococcus was found in 25 c.cm. the organism could have been obtained from the skin.

Dr. Libman said that in his opinion there was no question about the bacteriological findings in the cases which he had described. He did not consider it difficult to avoid contamination of the cultures if one had had experience. The patient from whose blood he had made two cultures was profoundly septic at the time of admission to the hospital, so that the question of infection from taking a culture did not need to be considered. The *Staphylococcus pyogenes aureus* was an organism concerning the presence or absence of which there could be no doubt if all the staphylococci that were found in the cultures were carefully examined. He wished to draw attention to the fact that one must be careful in reporting the presence of streptococci in the blood, for the reason that there are contaminating organisms which grow on media without sugar, like ordinary streptococci. On sugar media they could be readily distinguished as they formed large mucoid colonies. The two organisms of this group which he had seen were negative to Gram.

Dr. F. C. Wood said that he felt that he must defend the pathological internes at St. Luke's, for in comparison to the results of the staff at the Presbyterian contaminations were exceedingly rare with them. Their trouble was that they did not get any growth in a considerable number of cases from which one naturally expected to obtain some organisms. The cultures remained sterile and rarely showed contaminations. The system, which was in use at St. Luke's, was to plant a large series of broth tubes or flasks and then plate from these later.

Dr. W. H. Park said he thought one thing should be remembered: that where cultures were made continuously by experienced observers like Dr. Libman, the results were more reliable than when made by hospital internes. He had had considerable experience in making blood cultures in malignant endocarditis. In nearly all cases the organisms found were streptococci. He had been afraid to consider that staphylococci came from the blood if they appeared in one flask only, when several were inoculated, for fear that the growth might have been due to skin infection.

Dr. G. P. Biggs said that in septic cases at the New York Hospital they had had no particular trouble in getting positive results from blood cultures, but had found the streptococci much more frequently than staphylococci. He desired to commend the work of the House Staff in making these cultures. Thorough precautions were taken and contaminations were very few.

Dr. Libman said he believed that he had stated in the description of the first case that the blood culture was made twelve days ante mortem and was repeated ten days ante mortem, and that the same organisms which were found at that time were found in the heart blood post mortem and in spreads made from the surface of the endocardium and from the metastases. A specimen which he had to show under the microscope showed very beautifully that the fibrinous area on the heart walls consisted entirely of staphylococci. In the last case which he had reported the streptococci were found in the blood one month ante mortem and twice on later occasions. He had made blood cultures in over 350 cases of septic conditions (this did not include cases of typhoid fever or pneumonia) and in all cases in which he had found organisms present in the blood he had found the same organism present in the primary focus in the case, or in the metastases, or in both; often the same organism was found in the urine, so that there was no doubt about the validity of any of the results in the cases reported. Dr. Libman said that he had frequently found the *Staphylococcus aureus* in the circulating blood; there was no reason why it should not be found as well as the streptococcus. In only one case had he found the *Staphylococcus albus* in the blood. This was in a case of endocarditis which he had showed to the Society two years before. In that case numerous colonies had been obtained, and the spreads which had been made from the inflammatory swelling in the septum of the heart post mortem, showed innumerable staphylococci. The culture from the swelling showed the *Staphylococcus albus.* He believed that at that time he might very well have been dealing with the *Staphylococcus aureus* because he had not then made it a point to test with sufficient care all organisms which looked like the *Staphylococcus albus.* In the last four years he had not come across a case in which he could ascribe a systemic sepsis to the *Staphylococcus albus.* The finding of the *Staphylococcus aureus,* however, if blood cultures were made properly, was of just as much significance as finding a streptococcus. In a number of cases they had found that the organisms often did not persist for a long time in the blood, they settled in various parts of the body and formed metastases. In some cases of endocarditis, however, they had found streptococci in the blood repeatedly. In three cases they had found them frequently during the course of several months; two of these cases had left the hospital with slight temperatures. One had died and examination showed endocarditis of the left auricle: streptococci were found in the heart blood.

Dr. Field asked who took the blood cultures, and whether they were taken by the members of the House Staff.

Dr. Libman said they were nearly all taken by himself. He had had only two members of the House Staff take them in the last three years. They gained experience for a month or two on cases from which no organisms were expected. After they had obtained sterile results in such cases they were allowed to take blood cultures, which Dr. Libman was willing to count in his statistics. Only those men who had already done some work in bacteriology were permitted to make the cultures. If a man could not obtain cultures without contaminations Dr. Libman said he would not be willing to have him take one in a case which he was anxious to include in his studies. The blood cultures in the cases which he had reported had all been made by himself.

In reply to Dr. Park, Dr. Libman said he was rather surprised that there should be any doubt as to the finding of the *Staphylococcus aureus* in the cases which he had reported. As he had stated before he had no difficulty in finding staphylococci and in confirming his results. He had not found the *Staphylococcus albus* as a contamination on his plates. He had occasionally got colonies of ordinary molds or organisms which could at once be recognized as being non-pathogenic organisms, but these were generally found after the flasks had been examined once or twice. He felt so sure of a systemic infection by the *Staphylococcus aureus* when he obtained it in his blood cultures that he had recently been willing to state that there was a systemic infection by the *Staphylococcus aureus* in a case in which he had found only one colony on the plates where five cm. of blood had been used. This blood was obtained from a man who presented signs of severe sepsis, which developed shortly after he had had a slight infection on his foot. The day after he had reported that the sepsis was due to the *Staphylococcus aureus,* Dr. Libman said, several intramuscular metastases were opened and the *Staphylococcus aureus* was found in spreads and cultures. The man was operated upon several days later for a large metastatic abscess of the right kidney, and the same organism was found. Dr. Libman thought this case demonstrated very well the fact that the *Staphylococcus aureus* could be found in blood cultures, and that the findings could be relied upon.

**Differentiation of Monkey from Human Blood by the Serum Test.**—Dr. James Ewing presented some observations on this subject. At a previous meeting of the Society the speaker had given the results of some experiments which tended to show that to get any specific result in the differentiation of animal bloods by the precipitation of albumins by specific antisera, one must consider not only the dilution of the blood to be tested, but even more carefully the dilution of the test serum. In those experiments it had been shown that in dealing with a very active beef-rabbit serum, one could obtain precipitates with quite a variety of bloods other than beef, if the test serum was not diluted more than one to five. When, however, the beef-rabbit serum had been diluted one to thirty, only beef and goat blood reacted, while at the dilution of one to fifty goat blood failed to react, and beef blood still gave a prompt precipitate. The dilution of the blood to be tested, if under one to five hundred, made comparatively little difference. These results were very similar to those obtained previously with the same method by Kister and Wolff (*Zeitsch. f. Hygiene,* Bd. 41); but quite different in some minor respects. Since then Dr. Ewing had attempted to see to what extent monkey blood of various accessible types reacted to humanized sera. For this purpose he had obtained blood serum from four monkeys representing three different breeds, and had tested these sera with four different strains of humanized sera. The monkeys tested were two Java, one *Rhoesus,* and one baboon, whose full generic term Dr. Ewing could not give. The test sera used were two rabbit sera, called No. 1 and No. 2, which had been prepared by Dr. Strauss in the Cornell Laboratory; one rabbit serum, called No. 3, prepared by Dr. Payne in the laboratory of the Department of Health; and one chicken serum, called No. 4, which Dr. Ewing himself had prepared. He wished to express his indebtedness to these gentlemen for the supply of these sera. The strength of the sera could be indicated in various ways, perhaps best by the highest dilution in which they had yielded a flocculent precipitate in human blood, diluted one to fifty or one to one hundred, within three hours or less. The following sera gave precipitates in one month old human serum:

| TEST-SERUM | DILUTION OF TESTED SERUM | DILUTION OF TEST-SERUM | TIME |
|---|---|---|---|
| No. 1 | 1-100 | 1-50 | 30 minutes |
| No. 2 | 1-100 | 1-50 | 3 hours |
| No. 3 | 1-100 | 1-200 | 1 hour |
| No. 4 | 1-100 | 1-50 | 1½ hours |

Serum No. 3 (Dr. Payne's) had proved extremely active, having given an instantaneous turbidity when added in a dilution of 1 to 100 to human serum diluted 1 to 100. Serum No. 4 (chicken serum) was distinctly more active than No. 1 or No. 2. The results, with the use of these sera on monkey serum, were briefly as follows:

1. *Baboon Serum.*—In all dilutions of test sera Nos. 1, 2 and 3, up to and including one to thirty, the baboon serum gave flocculent precipitates or turbidities within three hours, which were indistinguishable from many reactions encountered in testing known human blood. This was specially true with serum No. 3, which precipitated baboon serum about as actively as human, up to one to twenty, and gave a very slight, flocculent precipitate in three hours, when added in dilutions of one to forty to baboon serum diluted one to two hundred. These precipitates were, however, much less marked than in the corresponding human controls. Even with the active serum No. 3, baboon blood in any dilution failed to yield a flocculent precipitate in three hours when the test serum was diluted one to fifty. The reactions with sera Nos. 1 and 2 were less marked, and the pronounced turbidities occurring usually failed to become flocculent in three hours.

2. *Rhoesus Serum.*—The reactions with this serum were almost identical with those obtained with the baboon. Sera Nos. 1 and 2 failed to give flocculent precipitates in any but the earlier dilutions (1-10, 1-20) within three hours, although causing prompt and distinct turbidities. Serum No. 3, however, gave abundant flocculent precipitates in three hours or less, up to dilutions of the test serum one to forty, beyond which the turbidities failed to become flocculent in three hours plus. The dilution of the monkey serum if not beyond one to two hundred made very little difference in the results.

3. *Java Serum.*—This serum reacted more like human blood than did any of the others. With serum No. 1 it gave distinct turbidities up to a dilution of test serum one to forty, but the turbidities failed to become flocculent. With serum No. 3 a flocculent precipitate was obtained in ninety minutes, tested serum one to one hundred, test serum one to eighty. With test serum one to one hundred distinct turbidities occurred promptly, but failed to become flocculent. With test serum one to two hundred all trace of reaction failed, although in the human control a flocculent precipitate occurred in one hour.

From the results with these humanized rabbit sera it appeared to be possible to distinguish from human blood that of certain monkeys by using high dilutions of test sera, the strength of which had been accurately calibrated. The strong sera No. 3 gave the most satisfactory results, since in high dilutions (1 to 100, 1 to 200) it failed to react with monkey blood, while still actively precipitating albumins of human blood. With all lowered dilutions, however, this serum gave turbidities or precipitates in both bloods which would not permit the separation of the monkey from the human. The suggestion arose that an animal more distantly removed from man might yield a more selective serum. An ordinary hen was therefore treated with six intraperitoneal injections of ten c.c. defibrinated blood, at intervals of two to three days. Last injection February 5; serum drawn February 9. This animal did not react to these injections by any visible symptoms. Its serum, previously inert, was found to precipitate the above specimen of old human serum rather actively as shown in the table. When tested on Java and Rhoesus serum it failed to give a flocculent precipitate in eighteen hours in any dilution, and gave only the very faintest turbidities in the earliest dilution (1 to 10) beyond which the monkey serum remained clear till developing bacterial growth. This single experiment did not, of course, demonstrate that all humanized chicken sera would prove so selective, and Dr. Ewing had not had time to repeat the experiments with other chickens. In any event it would seem that the chicken might be recommended for this class of experiments. It was easily handled, was cheap, received injections without apparent reaction, yielded blood freely from superficial veins in the wing, stood hemorrhage well, and was apparently immune to most ordinary infections. Dr. Ewing concluded from the experiments that monkey blood could be separated from human blood under suitable conditions. One must know accurately the strength of the test serum used. The stronger the serum the greater was the danger of confusing monkey with human blood in slight dilutions were used, while with high dilutions the strong sera yielded flocculent precipitates long after monkey blood had ceased to react. Very strong serum must be diluted, at least one to one hundred, better one to two hundred, and confidence should be placed only in flocculent precipitates occurring within three hours or with a certain promptness. Humanized chicken serum seemed to be extremely selective for human blood and showed less antagonism than humanized rabbit serum against monkey blood.

Dr. W. H. Park said he did not understand the necessity of using a dilution of one part of albumin or serum to one hundred of normal salt solution in order to get a complete reaction. If a series of tubes were arranged containing 0.1 per cent., 1 per cent., 5 per cent., and 10 per cent. of serum, and the solution of precipitin was gradually added there was found first a precipitate in the 0.1 per cent., and then in the 1 per cent. solution. If a stop was made there, little change was found in the 5 per cent. and 10 per cent. solutions. If, however, as much more precipitin was added as there was substance to be precipitated, as complete a reaction was obtained in the 5 per cent. or 10 per cent. solutions as in the one per cent. with five or ten times as much precipitate. An amount of precipitin much too little to influence all of the albumin in solution did not completely act on a small portion, but acted a little on all so that little effect was manifest.

Dr. Harlow Brooks said that he thought Dr. Ewing's work was of the greatest importance, since it promised to throw some light on the ever interesting question of evolution and might assist very materially in determining more accurately the position which the various animals really occupied in their relation to man. He did object, however, to the text of Dr. Ewing's conclusions since he stated that the blood of monkeys could be definitely distinguished from the human, and based his conclusions on the results of his experiments which had been conducted with the lower members of the monkey family only. No one doubted but that there was a very wide space intervening between man and these lower types of the primates. Huxley had showed long ago that fully as wide a space existed anatomically and mentally between the lower primates and the apes as between the apes and man. Dr. Ewing might about as well have compared the blood of man with that of the dog family as with that of the baboon. The crucial test was to make such experiments with the blood of the highest primates, and only after Dr. Ewing had shown that a marked difference existed between the blood of these animals, and man would be justified in making so sweeping a conclusion as he had given. Dr. Brooks ventured to predict that Dr. Ewing would find an even wider variance between the sera of the orang and the lemurs than between that of man and the orang. The question could not be considered as settled until such determinations had been made.

Dr. Charles Norris thought that Dr. Brooks' point was well taken for Nuttall and Grünbaum had not been able to distinguish the blood of the higher monkeys, the primates, from human blood by the precipitin test. With the blood of other species of monkeys differences had been noted.

Dr. Dinkelspiel said he thought the results obtained by Dr. Ewing spoke for themselves. By calibrating the dilutions he had derived from them a method of separation of monkey blood from human blood, a consideration which was not taken up at Cambridge. They had there used pure serum and mixed it with the original blood diluted one to one hundred. He thought this was where they had made a mistake as the sera were too strong. They had used the blood of the ox, sheep and deer, and such homologous bloods as that of the apes and human blood. He thought the line on which Dr. Ewing was working was in the right direction.

Dr. F. C. Wood asked if Dr. Ewing had observed any quantitative differences between the amount of precipitate obtained in the serum of healthy individuals. He had frequently found that there were considerable differences in human blood with accurate dilutions of both the blood and the precipitating serum.

Dr. Ewing, in answer to Dr. Park's question as to why the chicken gave such a selective serum, said that it would appear reasonable to suppose that this selective quality had resulted from the failure of the injections to excite any great disturbance of the viscera. Rabbits showed considerable disturbance, pain, restlessness, increased micturition, etc., after injections of beef and human blood, and these disturbances were probably accompanied by the production of various peculiar products of metabolism which might have interfered with the selective action of blood precipitins. The chicken showed no disturbance whatever that he could detect and it developed a very specific serum. Or the result might have depended upon the very distant removal of the chicken from man. In answer to Dr. Wood's question, he said that he had not found any great difference in the reaction given by various specimens of fresh human blood; but old specimens had seemed to react less promptly. Greater differences arose from the age of the test serum. Dr. Norris had referred to the well-known work of Nuttall and Dinkelspiel, and of Grünbaum, who had found great similarity in serum reactions between monkey and human blood. He did not remember from any of their publications that they had used carefully calibrated sera in increasing dilutions after the method first employed by Kister and Wolff, and on which alone the results of the present work depended. Doubtless he had not seen some articles which others had encountered, but he knew of no previous attempt to distinguish monkey from human blood by this particular method. Dr. Brooks had pointed out very opportunely the limitations of the present set of experiments, and had shown that they could apply with certainty only to the lower monkeys. He had realized this limitation and did not claim to have determined as a fact that any monkey blood whatever could be separated from the human blood by this method, but only that of the baboon, Rhoesus, and Java monkeys. He had not been able to secure any blood from the higher anthropoid monkeys. Perhaps Dr. Brooks could furnish such specimens through his official connection with the Zoological Garden. There was, however, a great difference in the comparison of lower monkey blood with human, and dog blood with human. Dog blood could hardly be confused in the test with human blood, while monkey blood was separated with difficulty and only by high dilutions of serum. The lower monkeys might appear to zoologists to be as far away from the anthropoid monkeys as was the dog from the lower monkeys, but there was not room enough in the scale of serum reactions for an equal difference to exist between the bloods of high and low monkeys. Hence he felt rather confident that the blood of the anthropoid apes would be found separable from human blood by calibrated serum. He would anticipate no greater difficulty in this than was encountered in separating beef, and sheep by beef-rabbit serum, as the beef and sheep were probably as closely related as were the man and ape.

**The Results of Intravenous Injections of Dilute Formalin Solution Into Septicemic Rabbits.**—Dr. L. B. Goldhorn presented some observations on the morphological changes in the blood of rabbits into which formalin had been injected intravenously. He said that he found that changes were present in the granulæ of the leucocytes and that the relative percentages of the different forms remained rather constant, but that an anemia invariably developed after formalin injections. The degree of the anemia depended upon the amount and strength of the solution injected. It evidenced itself by an increase in the polychromatophilic cells, by the presence of poikilocytes, and by enucleated red cells. In one rabbit which received an injection of ten c.c. of one to five thousand formalin dissolved in water, and four days later, five c.c. of one to ten formalin, anemia was very marked and there was a polynuclear leucocytosis. The lymphocytes showed the phenomena of nuclear division. This rabbit died about one month later and during this time exhibited loss of coordination and a heightening of the reflexes. One rabbit, which showed a high percentage of lymphocytes, was autopsied and found to have an extensive coccidiosis of the liver, besides considerable ascites.

## NEW YORK ACADEMY OF MEDICINE.

### SECTION ON ORTHOPEDIC SURGERY.

*Stated Meeting held February 20, 1903.*

T. Halsted Myers, M.D., in the Chair.

**Hip-joint Disease.**—Dr. Ely presented a case of cured congenital dislocation of hip, that had been under treatment for the last two years. The child, five and a half years old, was operated on April 28, 1901; she had the usual symptoms, and had an inch and three-quarters shortening, and the operation was very difficult. It took about two hours. The first plaster was on about six months; the next one for about three months. The last spica was removed in November, 1902, making about eighteen months in plaster of Paris. She now has legs of the same length exactly, and can run and hop with either leg. Dr. Lorenz took the leg operated upon for the normal one.

Dr. Homer Gibney presented a case of cured hip disease, which had been under treatment for the past two years. Within three weeks the brace had been removed and a plaster spica put on, which goes down to the knee. All the symptoms have subsided. The last examination showed that the flexion was almost normal, but to guard against any injury, when all acute symptoms have subsided and the child can flex and abduct the limb almost normally, a spica was adopted. The next procedure will be to put on a high shoe, and then the child is discharged as cured.

After the children have worn splints for two or three years, sometimes they are sent away from the hospital and allowed to take the apparatus off at night and sleep without it. The mother comes and reports that the child has no pain and no discomfort. Then the child is allowed to take off the brace by day. Lately this method was adopted.

**Rheumatoid Arthritis.**—Dr. Whitman has asked five patients with rheumatoid arthritis to come here to-night, and there are two in the hospital he might have brought. This first girl is now twenty-five years old; her right arm is helpless and perfectly stiff; she had a certain amount of stiffness in the left arm and stiffness in the shoulder. She was worse at one time than this little boy, the second case, who is now about the same as she was when we began her treatment. This shows the characteristic appearances—the thickening of the wrists and the inability to extend the fingers. He was interested to hear the mother say the child had had no treatment whatever except what she described as "exercise and nourishing food." This little girl, the third case, was brought to him about a year and a half ago, at the age of one year. She began to have this painful condition of the knee. She was taken to the hospital and was treated at first for a tuberculous disease of the knee. That treatment was apparently successful until our attention was directed to the fact that the trouble had appeared in the other knee; then it came in the elbows, hands and wrists, as you see here. The child was in a very bad condition, and then it had the measles, and, as sometimes happens, the contagious disease apparently cured her of the other trouble—she was almost well, except for this shoulder, but then she gradually relapsed again. After a time she had electricity applied—the wave current, not the spark current. The immediate effect of this was very favorable, and he has noticed it in a number of instances. The pain disappeared and the disease was apparently checked. Now she has had no treatment for three months and the improvement, so far as pain is concerned, has continued. Of course, no one would think of calling this child well—but she is certainly a great deal better.

**Pott's Disease.**—Dr. Townsend presented a case of Pott's disease, abscess and paraplegia. This little girl is seven years old, brought to the Hospital for Ruptured and Crippled seven months ago. At that time a small kyphos had appeared, and the mother was instructed to bring the child back for treatment; but she failed to return. When the child was again brought to the hospital paraplegia was complete, her respiration was very much increased and signs of tuberculosis, in addition to Pott's disease, had developed. It is stated to have followed a distinct attack of pneumonia; with severe pain in the side and marked cough. The rapidity with which the disease has progressed is interesting, and an abscess has formed in front of the spine. The abscess is probably outside the vertebral canal; it may press somewhat upon the lung. He would like to ask the opinion of the Section, what operative procedure, if any, they would advise in a case of this kind?

Dr. Sayre thought it would be wise to explore that abscess; it seemed to him it did go around the spine.

It looked to Dr. Virgil Gibney like a mediastinal abscess.

Dr. Goldthwaite thought the safer procedure for the child would be to explore the abscess. It seemed to him to be possible that it may communicate with the posterior mediastinum, and by getting rid of it one might get rid of the irritation that causes the child to cough, and she would be relieved. Of course, the opening of the mediastinum is a good deal of an operation, but it seemed to him not impossible.

Dr. Ely said that if it were his case he would let it alone; it struck him it would be unwise to operate on it. It seemed to him that the child is more comfortable when lying on its back.

Dr. Homer Gibney said the method of keeping children on their backs has been shown here a number of times; he found he could keep them on a frame.

Dr. Townsend said it was a case where the parent did not realize the gravity of the case. As matters are growing steadily worse, perhaps the mother will feel that the doctor's advice is proper, and will carry it out, but they cannot compel these people to come into the hospital nor get the child under treatment.

Dr. Myers said it is not proven in this case that the symptoms are due to the abscess. Pain and reflex spasm may cause them. Unless the child has a marked temperature or leucocytosis, showing secondary infection, he would rather, for a time, put it in some protective apparatus. The mere drainage of the abscess would do very little good. It is now pointing posteriorly, and will open there spontaneously soon. Meanwhile the traumatism and pain of daily dressings are avoided, and a brace more conveniently applied.

Dr. Goldthwaite remarked that he reported four cases of posterior mediastinal abscess. Three died suddenly in a paroxysm of dyspnea. In one case he operated on the patient during such a paroxysm and succeeded in draining the abscess. She is wearing a brace now. It seemed to him that that would be an indication, more than anything else, for the operation. The diagnosis has to be made of the child's condition from the character of her breathing. Here one has a rapidly increasing abscess. It shows plainly in the back, and it probably comes from in front of the spine.

Dr. Virgil Gibney said that about two weeks ago they had a case of this kind. They had the child in a jacket. It had a sinus in the neck which was discharging a little; they had to take the jacket off one day, and put on a swing. They made an opening in one side. The child began to collapse very rapidly and, he thinks, within a very short time it died. It went down quite suddenly, and the autopsy showed that there was a large vertebral mediastinal abscess that had broken into the canal, and that produced the collapse. The posterior mediastinal abscess was draining imperfectly, and that closed the canal, or nearly closed it.

Dr. Townsend said he had had one case in private practice where the patient died instantly. He held a post mortem and found it was a posterior mediastinal abscess. In this case he would follow the advice of Dr. Goldthwaite and others.

Dr. Sayre said he had a similar case; the child looked out of the window, and said good-bye to its father, and by the time the father had gone a block, the child was dead.

The paper of the evening was then read by Dr. Royal Whitman: "A Report of Final Results in Two Cases of Polyarthritis in Children, of the Type First Described by Still."

Dr. Whitman also submitted several photographs of the cases described in his paper.

The cases were in leg, aged respectively five and twelve years of age.

In each case the onset was gradual and the process was for a time confined to a knee-joint, the symptoms of pain and stiffness being mistaken for tuberculous disease. After a time practically all the joints became involved. There was accompanying extreme emaciation, general hyperplasia of the lymphatic glands, and enlargement of the liver and spleen. Several joints were explored and the process was found to consist in a transformation of the synovial membrane into what resembled granulated tissue. This spread in a pannus growth over the margins of the articular cartilages, eroding and destroying it. The younger patient recovered completely after an illness of about two years. The elder died at the end of about 3½ years. In this case even the joints of the fingers and toes were involved. In both cases the spine remained free from disease. In the case that came to autopsy the internal organs and even the mesenteric glands showed advanced amyloid change. The joints presented the same appearance as at operation. The cortical substance of the bone and the cartilage was extremely thin. The spongy tissue was dark-red in color, but firm and regular in structure.

Dr. Goldthwaite was highly gratified, and it gave him much satisfaction to have Dr. Whitman present this paper to-night; it seemed to him that it opens up for their consideration the large field of non-tuberculous bone-joint diseases, about which there is the most pathetic ignorance at the present time in the general profession, and the solution of which comes back very largely upon the orthopedic surgeon, because such diseases can only be studied in the hands of men who have a chance to form definite clinical pictures and to study the pathology which a general practitioner misses, and the fact that men are becoming aroused to this is a matter of great satisfaction.

The differentiation of the types of this disease, in the first place, and the etiology of these cases, in the second place, are problems which cannot be solved at once, and no one man can solve them. It means the work of a great many observers—it means the pathologist, the chemist and the bacteriologist, working in their laboratories—so results are balanced and studied in proper proportions. It is perfectly apparent, in the work which they have been doing, that there are distinct types of these diseases. He should say there are four types, which is as far as they had gone with their definite clinical and pathological picture. There are undoubtedly other types mixed up in those, which they do not yet understand.

The two types, which are perhaps the most striking at first, are the types designated as rheumatoid arthritis and osteo-arthritis.

The first is a disease which comes on insidiously, takes one or two joints at first, in the hand or in the foot, the process lasting sometimes many years until a person is badly crippled. It is a progressive disease which does not kill of itself, but cripples, and it is a type which fills the beds in our almshouses. Primarily it begins with a swelling of the joint structures—not "inflammation" as the pathologist uses the term. It is more the atrophic type of swelling. With the swelling there is almost always an atrophy of the cartilage, which is followed by atrophy of the bone. Coincidentally with the process of healing in some of the joints, after the stage of atrophy is past, there may be a fresh onset of the disease in another part of the body, as may be true in tuberculosis.

Dr. Goldthwaite here exhibited a large number of microscopic specimens showing the bone changes. Surprisingly enough there is no secondary anemia as in all cases of tuberculous diseases, nor the anemia of a septic process. The glands are not enlarged, nor the liver and spleen, apparently. The next type is osteo-arthritis. There is hypertrophy of the edges of the cartilage, with a marked atrophy of the central portion. Photographs showing a condition of hypertrophy from the start, were shown by him. That is a disease which attacks a great many joints, but it is not a progressive disease necessarily, while the so-called rheumatoid disease is.

Then there is another puzzling type which has come to be observed more or less recently, which was designated, for want of a better term, toxemic—a group of cases which sometimes comes from traceable causes, and at others from no apparent cause. The X-rays which one gets from these cases are different from those in the rheumatoid condition, and there is an enlargement of the glands, spleen and liver, which shows anemia, or sepsis of the joints—any number of joints may be involved. He made a diagnosis of a case of toxemic arthritis where the patient died. The autopsy showed the characteristic features of this disease, and it seemed to him that the condition described by Still comes better under that class than any other. It is a condition which is not confined at all to childhood. One may have the same type in adults as in children. One case he observed in a child who had a tooth filled. A very strong, robust child. Following that the child ran down rapidly, developed joint symptoms, and to-day presents all the appearances described by Still. The knees are affected and the neck is affected. He has seen the same thing in other cases, starting in at one joint and then involving others, and in one case we got a culture from the throat. The process went on of the same type as we have described as toxemic arthritis.

The differentiation between that and rheumatoid is a matter of a good deal of importance, and it is somewhat difficult. Dr. Whitman has reported one which should be placed in that class. The cases may go on a long time. Many get well, and frequently without treatment. So, as a matter of prognosis differentiation is important.

There is the other type—that is, pure gout, chronic gout. There is usually a pure deposit of uric soda about the joints, as shown by chemical analysis. In these cases, however, there is not simply an atrophic condition, but a destruction of the bone, as he thinks he can show in the X-ray photograph, in which one of the joints has almost entirely disappeared. He has a series of X-rays, together with plaster casts here, which will make the condition clearer, showing the typical swelling and appearance of the wrists and arms.

Dr. Sayre said he was very much interested in these papers. It is a subject of which he is extremely ignorant, although he has been watching a number of these cases for several years, one since 1886. In one he excised the bone. The chief difficulty was in a case year before last—a small child. There was this great neurotic tendency paraplegial neuritis and neurotic disturbances of the circulation; also this ecchymosis which you see in certain nervous affections, in various parts of the body, which disappears quite rapidly at times. The case was much relieved by the application of electricity. It seems in several of these patients to be very largely a question of diet, in regard to the improvement of the condition of their joints. In what way the assimilation is defective he had not been able to determine. There is also very defective excretion. He has been unable to classify these cases, and he has listened with great pleasure to Dr. Goldthwaite's diagnosis and Dr. Whitman's paper on the subject. In one case—he has not seen it in almost two years—which he had under his observation for a while, the child was brought back to him a short time ago by its father well, with the exception of one joint. It surprised him greatly. He does not know why it got well.

Dr. Townsend said the first cases reported by Dr. Whitman interested him very much. He remembers some seven or eight years ago reading a monograph on a case of rheumatoid arthritis. He thinks that Dr. Whitman said he had found only twelve cases in several years. He is sure they see that number every year at the Hospital for Ruptured and Crippled.

Dr. Whitman said he is particularly interested in the cases he has presented. He would call particular attention first to the fact that the disease is accompanied by a destruction of the cartilage, and second that a stiffness of the spine is not always one of the early symptoms. These two patients went on to the end without any affection of the spine. Some of Still's cases are cases of what we may call rheumatoid arthritis. Dr. Townsend spoke of a case he had six or seven years ago, where the patient is now very much improved. It is really interesting to see how these cases of pure rheumatoid arthritis, with no treatment whatever, except the protection that the hospital affords, may be cured.

Dr. Whitman said he was much interested in Dr. Goldthwaite's remarks on this subject; but he does not know whether he should class them on the toxemic side or not. He should say, however, that in both of these cases the disease is confined to one joint. He is inclined to think that the symptoms are rather too slow in appearing, because in the first case the patient had this affection for months before the general affection of the joints.

Dr. Goldthwaite said he does not mean to give the impression that in the so-called toxemic type the joints became involved all at once. He meant in a comparatively few months, and new joints were not invaded. In severe cases all the joints may be involved; but he has seen cases where only one or two joints were affected. He has omitted entirely any reference to the treatment, because that is too much to undertake in a discussion of this kind; but in almost all these cases one can make the degree of crippling less by careful treatment. In many cases one can get persons onto their feet, not walking normally, of course, but so they can get around their room.

Dr. Balsley presented his apparatus for taking casts of feet for flatfoot plates. A four-inch wide band of sheet steel or lead is bent to conform very loosely to the lateral outline of foot and ankle. A removable piece of board fits inside this. A four-inch roller bandage closes the outlet at the ankle. The foot is now placed in the box so formed, the external malleolus resting on the roller bandage supports the foot steadily, while the plaster is poured around it and the casts taken in the usual way. As the board is removable the apparatus can be used for either foot by simply turning it over, always keeping the board at the bottom.

## BOOK REVIEWS.

Diseases of the Skin. By H. Radcliffe Crocker, M.D., Lond. F.R.C.P. Third Edition. P. Blakiston's Son & Co., Philadelphia.

Crocker's book on diseases of the skin needs no trumpeting from the house-tops. Its merits have long been recognized and it stands to-day as the ablest exponent of British dermatology.

Believing, as we do, that, in diseases of the skin, there is nothing as helpful as copious illustration, the book falls behind many of our more modern treatises in its lack in this feature. It is to be hoped that in a future edition the author and publisher will bear this in mind, and thus bring what is one of the very best texts on the subject of dermatology, by means of well-chosen illustrations, into the front rank of works devoted to this specialty.

Ueber das Pathologische bei Nietzsche. By Dr. P. J. Möbius. J. F. Bergmann, Wiesbaden. Lemcke & Buechner, New York.

The life of this interesting German philosopher was full of interest and surprises and his early mental decay and ultimate death were tragic events in a living chapter of more than usual interest.

Möbius has here made a careful and, at the same time, a sympathetic study of this celebrated man. He first discusses the early life of Nietzsche, his progenitors, and his personality. He then describes and goes into the minutiæ of the sickness of Nietzsche, describing in great detail his attacks of migraine and showing, by his writings, as well as from the letters of his sister, the development of his mental degeneration.

His mental disease Möbius states was general paresis, from which disease he died. The brochure which is only 106 pages in length is a most interesting one, dealing, as it does, with a master mind. It is well deserving of a wide circulation.

Therapeutics of Infancy and Childhood. By A. Jacobi, M.D., LL.D. Third Edition. J. B. Lippincott, Philadelphia and London.

The first edition of this book was published only nine years ago and the need of two revised editions since that date is ample evidence of the book's usefulness. The same attributes which have commended this work in the past still render it one of the most practical of our modern text-books.

The present revision does not depart in any essential features from the general character of those that have preceded it. As an author who has had one of the richest experiences in the treatment of diseases of children in this country, if not in the world, Dr. Jacobi's work comes with a foundation of sound and mature judgment that is often lacking in works of some of the younger generation.

There is a healthful conservatism that endears the work to many of the older generation and a scientific enthusiasm which throughout manifests the author's sympathy with the work of the newer pediatrists. It therefore, makes, we believe, one of the safest guides to the general practitioner with which we are acquainted. We trust that the author will give us many more editions.

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## ORIGINAL ARTICLES.

### SOME PROBLEMS IN THE MAJOR SURGERY OF THE KIDNEYS; WITH A REPORT OF CASES.[*]

BY JOSEPH A. BLAKE, M.D.,
OF NEW YORK:
JUNIOR SURGEON TO THE ROOSEVELT HOSPITAL; ATTENDING SURGEON TO ST. LUKE'S HOSPITAL.

A DETAILED consideration of all the problems connected with the surgery of the kidneys is out of the question in such a short paper as I am expected to give you. For this reason I have decided to confine myself to some of the problems connected with the treatment alone, ignoring as far as possible the etiology and diagnosis. I have therefore selected a certain number of my cases which seem to possess interest in regard to some of the questions arising in the major surgery of the kidney. One of the most important is that of nephrotomy or nephrectomy in suppurative conditions and in advanced calculous diseases of the kidneys.

Under this category may be placed: (1) pyonephrosis; (2) infected hydronephrosis; (3) pyelonephritis; (4) calculous disease with suppuration.

Cases of discrete abscess formation and perirenal abscess will not be considered as there is no question as to their proper treatment by incision or excision of the affected part. For a similar reason tuberculosis of the kidney is omitted, its treatment being generally conceded to be extirpation.

The question of the choice of nephrectomy or nephrotomy in pyonephrosis, pyelonephritis and infected hydronephrosis was most admirably discused before this section last year by Dr. A. B. Johnson, in a paper entitled "Operative Treatment in Certain Suppurative Conditions of the Kidneys."[†] My experience in these diseases is to a large degree corroborative of Dr. Johnson's views and my cases are reported simply in the light of affording additional evidence.

In regard to pyonephrosis, Johnson's conclusions are that primary nephrectomy is the safest operation, and that nephrotomy gives a much higher mortality and a far less number of cures. Israel's[‡] statistics for pyonephrosis in 19 cases operated upon are as follows: 13 cases treated by primary nephrectomy, cures 70 per cent., mortality 23 per cent.; 6 cases treated by nephrotomy, no cures, mortality 40 per cent., two of these cases of nephrotomy were treated by secondary nephrectomy with a mortality of 50 per cent., and one treated by an operation for the remaining fistula resulted in a cure. Both Johnson and Israel found that a toxic nephritis present in the other kidney was benefited by the removal of the pyonephrotic kidney. In acute pyelonephritis Johnson advises nephrectomy. In infected hydronephrosis he states that nephrotomy is the operation of choice. In the latter cases I am inclined to differ slightly from him in that I should put nephrectomy as the operation of choice and reserve nephrotomy for the cases in which there was good ground to believe that a cure could be thereby accomplished, to cases in which there was still remaining a considerable amount of renal parenchyma and to cases in which nephrectomy would be a too dangerous procedure.

The mortality of nephrectomy and nephrotomy is less in hydronephrosis than pyonephrosis; (1) because the patients are in better condition; (2) because the secreting tissue of the affected kidney is generally atrophied and there is consequently compensatory hypertrophy of the opposite kidney; and thirdly because the disease is as a rule unilateral.

Israel's statistics for hydronephrosis are with primary nephrectomy, cures 80 per cent., mortality 20 per cent.; with conservative operations (*i.e.*, nephrotomy, nephropexy and plastic operations on the pelvis or ureter) cures 37.5 per cent., mortality 10 per cent. In a large percentage, 45 per cent., nephrectomy had to be done in order to effect a cure.

*Pyonephrosis.*—I have performed nephrectomy four times for pyonephrosis. In two the operation was primary both resulting in rapid cures; in the other two nephrotomy had been previously performed, in one by myself in the other by another surgeon who had also attempted the removal of the kidney but failed. One of these recovered the other died. I have performed nephrotomy only once for pyonephrosis with the result that I eventually had to remove the kidney. The cases are as follows:

*Left Pyonephrosis; Ascending Gonorrheal Infection; Secondary Calculus Formation. Nephrotomy and Extraction of Calculi. Persistence of Symptoms and Urinary Fistula. Nephrectomy. Cure.*

*Case I.*—F. L. B., butcher, thirty-five years of age, American. Admitted to The Roosevelt Hospital August 2, 1900. Previous history, gonorrhea fifteen years before admission, followed by cystitis from which he suffered to a more or less degree to the time of admission. For five years pain in left lumbar region of a steady numb character with paroxysms in which the pain extended downward to bladder. The pain was increased by exertion. The urine at times contained blood. Loss of flesh and night-sweats for several months before admission.

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[*] Read before the Genito-Urinary Section of the New York Academy of Medicine, Dec. 17, 1902.

[†] MEDICAL NEWS, May 3, 1902; p. 832.

[‡] Chirurgische Klinik der Nierenkrankheiten; James Israel, Berlin, 1901.

*General Condition.*—Spare, large frame, only fairly nourished. Heart action strong, mitral valve insufficient. Lungs negative. The left kidney formed a mass filling the lumbar region extending down to the crest of the ilium and forward to the parasternal line. Deep pressure just to left of the umbilicus caused pain referred to bladder. The right kidney was not palpable. By rectal examination the left lobe of the prostate was found slightly enlarged, the seminal vesicles normal.

The urine was acid in reaction, the specific gravity 1.030, it contained a large quantity of pus and some blood and albumin. The temperature was slightly irregular.

Nephrotomy, Aug. 7, 1900.—Eight-inch incision to a point 1½ inches in front of the spinous process of the ilium. The kidney was much enlarged and exhibited numerous soft fluctuating areas. Calculi could be felt in the pelvis. A long incision was made in the kidney and numerous cavities were explored and the dividing walls broken through. Pus of different colors and consistency was found in the cavities, in all about 20 ounces. A considerable amount of soft friable calculous débris and several fair-sized phosphatic calculi were evacuated. All the septa, in so far as was possible, were broken down and large drains were inserted.

The operation consumed an hour and a half and was attended with some shock. The hemorrhage was moderate. The result of the operation was fairly satisfactory at first and there was general and local improvement and he was discharged improved Sept. 16, 1900. The sinus, however, did not heal and he soon began to suffer from pain and an increase of pus in the urine. He was readmitted Oct. 15, 1900. Nephrectomy, Oct. 23, 1900. The kidney was not as large as at the first operation but contained several abscess cavities which did not communicate with the pelvis and some that did. The operation was twenty minutes shorter than the first one although it was very difficult on account of dense adhesions. There was considerable hemorrhage and the peritoneum was torn. Healing was uneventful and there was an immediate disappearance of pus in the urine. Discharged cured Dec. 7, 1900.

*Left Pyonephrosis; Ascending Gonorrheal Infection. Nephrotomy; Persistence of Urinary Fistula. Partial Nephrectomy; Persistence of Urinary and Purulent Discharge. Nephrectomy; Death.*

*Case II.*—E. J., locomotive fireman, thirty-four years of age; Canadian. Admitted to the Roosevelt Hospital August 30, 1900. Family history negative. Moderate use of alcohol. Two years before admission he had an attack of gonorrhea followed by rheumatism and what was said to be a distended colon. Shortly afterward he noticed a swelling in the left loin which increased in size. Nephrotomy was performed in Buffalo and a large quantity of pus was evacuated. The sinus persisting, nephrectomy was attempted and a portion of the kidney removed, which later was proven to have been the lower pole, the upper pole and pelvis having been left; the operation having been interrupted by the bad condition of the patient. Six months later he was admitted to my service complaining of a constant discharge of pus and urine from the sinus and inability to work.

*General Condition.*—Large and muscular, well nourished, had evidently had a magnificent physique. Heart and lungs negative. In the left lumbar region there was a large scar, in the center of which was a sinus five inches deep discharging pus and evidently the major portion of urine secreted by the kidney. An attempt at cystoscopy was ineffectual on account of a stricture of 14°F.

Nephrectomy, Sep. 12, 1900.—The sinus and surrounding scar tissue was removed with the kidney. The vessels and ureter were imbedded in scar tissue; the adhesions were of the densest kind; the upper part of the kidney which was all there was remaining with exception of the pelvis was several inches above the free border of the ribs adhering strongly to the diaphragm and was only recognized and removed with the greatest difficulty.

The vessels could not be isolated and were clamped, the clamps being left in situ. The peritoneum was extensively opened during the operation but was carefully protected by packing and closed at the end of the operation. The operation was prolonged and attended with much hemorrhage and shock. There was a good reaction and little temperature for the first thirty-six hours, but peritonitis developed on the third day. Although the abdomen was opened and thorough lavage and drainage employed he died on the fifth day.

*Right Pyonephrosis in a Displaced Kidney. Ascending Infection; Chronic Cystitis. Primary Abdominal Nephrectomy. Cure.*

*Case III.*—A. I., housewife, sixty-four years of age. Admitted to the Roosevelt Hospital June 4, 1902. Previous history. Two children. Always enjoyed good health until the last four years, during which time she has had slightly painful and frequent micturition. For two years has had attacks of pain in the right half of the abdomen which had been diagnosed as appendicitis. Was also told she had a movable kidney. In the last six months there has been more pain in the right side and increased frequency of urination. She has been under treatment for cystitis by irrigation. Has lost weight and strength.

*General Condition.*—Poorly nourished and anemic; small frame. Heart and lungs negative. In the right side of the abdomen a tender mass of somewhat irregular outline and surface could be felt extending from the free border of the ribs to the spine of the ilium and from the mammary to the axillary line. It was only slightly movable and did not move with respiration. It percussed behind the ascending colon. The lower pole of the left kidney was palpable but it was apparently not enlarged. The urine was acid, its specific gravity was 1.014, and it contained a trace of albumin and considerable pus. Cystoscopic examination showed very slight cystitis but redness and tumefaction about the opening of the right ureter. A satisfactory catheterization of the ureters was not obtained. A radiograph gave no evidence of calculus but resulted in a severe burn which, however, did not develop until a week after the operation.

Nephrectomy, June 23, 1902.—The abdominal route was selected on account of the position of the kidney and the incision, five inches in length, was made in the lateral border of the right rectus muscle. The ascending colon was lifted from the kidney and drawn in. The kidney was densely adhered to the colon, mesocolon and peritoneum and in separating them the mesocolon was torn in several places, some of the vessels being injured. The fatty capsule was to a large extent unrecognizable. The vessels and ureter were separately ligated and the stump drained through a stab wound in the loin. The peritoneum and abdominal wound were closed. There was little or no shock and no fever following the operation. Healing took place by first intention, although from the X-ray burn she lost the skin over an area of about four by five inches immediately about the wound. She has wholly regained her health and strength although she still has a slight cystitis. The kidney contained several sacculations of pus and there was advanced fatty and amylaceous degeneration, there being very little secreting substance left. During the operation the left kidney was palpated thoroughly and seemed normal.

*Pyonephrosis and Acute Pyelonephritis; Probable Ureteral Stricture. Mode of Infection not Ascertained. Primary Nephrectomy. Cure.*

*Case IV.*—H. T., male, twenty years of age; American. Admitted to the Roosevelt Hospital August 6, 1902. No history could be obtained in this case that threw any light on the manner of infection and the case is further peculiar in that there were no symptoms referable to the kidney until the day before his admission when immediately after the noon meal he had sharp, shooting pains in the right lumbar and iliac regions attended by vomiting and sweating and a frequent desire to urinate. Small quantities of urine were passed at a time and there was scalding pain in the urethra. No blood was passed. On admission he was in good general condition, the temperature was 101.6° F., and the pulse 100. Heart and lungs were normal. There was no distention of the abdomen. The right rectus and quadratus were rigid, precluding the palpation of any mass in the region of the kidney. There was marked tenderness over the region of the appendix and right kidney. The left kidney was not palpable. The urine was alkaline, its specific gravity 1.030, and it contained only a few pus cells. His temperature varied from 99° to 102.6° F. until August 8, when it shot up to 106° F. No tubercle bacilli were found in his sputum and no malarial organisms in his blood. On the day of admission the leucocytes numbered 8,000; on August 8, 9,000.

Nephrectomy, August 9. Under anesthesia a mass was felt like an enlarged kidney. An incision three inches in length was made through the outer part of the right rectus sheath. The mass was found to be the kidney. The other kidney was palpated and seemed normal. A transverse lumbar incision was then made and the kidney removed. There were moderate soft adhesions. There was no pus about it. The ureter was grayish, it was filled with pus and appeared to be gangrenous. It was not sounded. The kidney was large, it contained numerous cavities filled with pus and there were scattering foci of pus throughout the parenchyma which had not atrophied to any great extent. The wound was closed with drainage. There was very little disturbance from the operation. The temperature varied under 101° F. for four days and then became normal. He was discharged with a superficial granulating area on Sept. 12. The urine was then normal. A histological examination of the ureter in this case revealed chronic hypertrophic inflammation.

In the two latter cases there is no question of the propriety of nephrectomy. In the first two cases nephrotomy was unavailing and increased the danger of the radical operation, which later had to be done. As Johnson states, in order to perform a nephrotomy in pyonephrosis as it should be done, the kidney has to be exposed to practically the same extent as for removal. This leads to the formation of dense adhesions which often render a subsequent nephrectomy an almost impossible undertaking. The first and second cases illustrate this point well; the nephrectomy in the second case was one of the most difficult operations I have ever undertaken and it is the only case of nephrectomy I have lost in ten done for various lesions.

Besides rendering subsequent operations more dangerous we must remember that nephrotomy alone for pyonephrosis seldom if ever results in a permanent cure and that its primary mortality is nearly twice as great as that of nephrectomy. We must conclude, therefore, that nephrotomy is only indicated in exceptional cases.

*Hydronephrosis.*—I have performed nephrotomy once and nephrectomy twice for hydronephrosis.

*Infected Hydronephrosis in Movable Kidney. Hematogenous Infection. Nephrotomy: Persistent Urinary Sinus.*

*Case V.*—O. B., widow, fifty years of age. Two children, the youngest twenty-eight years of age. Admitted to the Roosevelt Hospital August 17, 1900. Has had symptoms referable to the left kidney for thirty years, consisting of attacks of pain occurring every six weeks to three months. Two years before admission she had hematuria for two days. Three months before admission shortly after an attack of influenza she had a violent attack of pain, accompanied by chills, fever and sweating. At the same time pus appeared in the urine. She gradually recovered from this and in six weeks she was up and about. Since then the urine had contained pus. Three days before admission she had another similar attack in which I saw her. The urine at the beginning of this attack contained little pus but later it was present in large quantities. Immediate operation was advised but was not consented to. Finally, as she continued to grow worse, operation was agreed upon and I took her to the hospital.

*General Condition.*—Poorly nourished, skin sallow. Temperature ranging between 101° and 103° F. Heart action poor, slight systolic murmur at apex. Lungs normal. There was slight abdominal distention; the muscles of the left side were rigid and a large indistinct tender mass could be felt extending upward from the crest of the ilium; dulness over it reaching to the angle of the scapula. The mass extended inward to beyond the mammary line.

Nephrotomy. An incision four inches in length was made parallel to the twelfth rib. There was extensive perirenal inflammation. On incising the kidney about three pints of urine and pus escaped. A sound passed into the kidney passed downward for eight inches and also upward for a considerable distance in a continous sac. A large drain was inserted. There was little shock. The sinus gradually contracted but all the urine secreted by the kidney escaped from it, and it has been impossible to get instrument through the ureter from above, and fluids only in the smallest amounts. She has refused to entertain any further operation although she has to continually wear a tube in order to prevent retention and consequent pain. The urine from this kidney compared with that passed from the bladder is much less in specific gravity and contains on an average one-quarter of the amount of urea. It now contains very few pus cells.

In this case there may possibly be a stricture of the ureter but more probably there is a kink or a valve formation. A plastic operation or perhaps, in view of the diminished secretory power of the kidney a nephrectomy should be done.

In this case nephrotomy was the proper operation in view of the condition of the patient, the size of the kidney and the fact that the fixation of the kidney by the operation might obviate a possible kinking of the ureter.

*Infected Hydronephrosis (left); Probable Stricture of Ureter from Gonorrheal Infection. Origin of late Infection not Determined. Primary Nephrectomy. Cure.*

*Case VI.*—S. K., Hungarian musician; forty-seven years of age. Admitted to the Roosevelt Hospital October 16, 1902. Syphilis twenty years previously. Gonorrhea ten to fifteen times, the last attack occurring four years before admission. Two years before admission he had an attack of pain following a cold bath, which lasted for five weeks. The pain was localized in the left lumbar region and was paroxysmal. The paroxysms were attended by sweating but there were no chills or fever. Eleven months before admission he had a similar attack lasting for four weeks, at the end of which time he returned to work but continued to have discomfort until three weeks before he came to the hospital. There had been no disturbances of urination. The urine had never contained blood but had been cloudy and thick for a long time. On admission his general condition was good. Temperature 98.8° F.; pulse 88. The heart was normal. In the lungs were evidences of bronchitis and he complained of cough. The abdominal wall was very fat and thick and the kidneys were not palpable or tender. The urine was acid, specific gravity 1.018, and it contained much pus, varying from 8 per cent. to 18 per cent. of the total bulk after being centrifuged for fifteen minutes.

Before his admission the ureters were catheterised by Dr. F. T. Brown. The urine from the right kidney was found to be practically normal while that from the left contained very large quantities of pus and only one-third as much urea.

Nephrectomy, October 23, 1902. The kidney was removed through an eight-inch transverse incision. It was distended with pus and was nearly eight inches in length. It was very adherent and in places the fatty capsule was removed with it. The pedicle contained a mass of enlarged lymph nodes rendering the isolation of the vessels extremely difficult and consequently the ureter was included in the ligatures and was not explored, but the upper portion was seen to be dilated. The kidney was a large single sac with extremely thin walls, the parenchyma having been almost totally destroyed.

Although the operation was long, consuming nearly an hour and a half, it was attended with little hemorrhage and no shock, and convalescence was uneventful, the patient leaving the hospital on November 17 in perfect general health, just a month after his admission.

After operation the urine was of the same specific gravity as before and on leaving the hospital it still contained very small quantities of pus.

*Left hydronephrosis; stricture of ureter; hemorrhage. Primary nephrectomy. Cure.*

*Case VII.*—P. L., Italian, laborer, twenty-eight years of age. Admitted to the Roosevelt Hospital July 9, 1902. The previous history was entirely negative. For three years he had had intermittent attacks of pain in the left lumbar region shooting down the course of the ureter. Some of the attacks had lasted twenty days. For five weeks the pain had been very severe and paroxysmal and after each attack he had noticed mixed blood in the urine. There had been no disturbances of micturition. On admission, general condition very good. Temperature normal. Heart and lungs normal.

A mass varying in size was felt in the left lumbar region, at times being scarcely palpable, at others reaching nearly to the crest of the ilium. There was no rigidity of the overlying muscles but considerable deep tenderness. The right kidney was palpable but seemed to be normal in size and was not tender. The urine was alkaline, specific gravity 1.030; it contained a few red blood cells.

Nephrectomy, July 1, 1902. The kidney was removed by a transverse lumbar incision eight inches long. It was only slightly adherent. The kidney and pelvis were much distended, the walls were thinned and in removing it it was ruptured, a quantity of brownish urine escaping. Its length before it ruptured was estimated to be nine inches.

A sound passed into the ureter was arrested just beyond the pelvic brim and an attempt to inject water through the stricture in appreciable quantities was ineffectual. The operation was not difficult and was not attended by hemorrhage or shock. Convalescence was uneventful. The urine after the operation was normal in quantity and character.

Manifestly these cases are too few in number to enable us to draw any deductions as to the treatment of hydronephrosis. Since hydronephrosis is essentially a distention of the kidney from obstruction, nephrotomy alone will seldom effect a cure unless at the same time the obstruction is removed.

Nephrotomy is indicated in certain cases of infected hydronephrosis in order to pave the way by removing the infection for a curative operation. Sometimes, if the obstruction is due to kinking of the ureter from abnormal mobility or displacement of the kidney, the fixation of the kidney in proper position can be accomplished at the same time. However, in the greater number of cases the cure has to be left to a subsequent operation.

Plastic operations on the pelvis and ureter have been attended with very little mortality and with a large measure of success. The choice of an operation in these cases will largely depend upon an accurate diagnosis of the cause of obstruction and a judicious estimation of the economic value of the distended kidney to the individual. It seems to me that we should bear in mind that an old hydronephrotic kidney does not regain its usefulness when the obstruction is removed and that it always is a diseased member and liable to accidents. Furthermore in proper hands at the present time nephrectomy should not give a mortality of 20 per cent. I should be inclined to put it under 10 per cent. Yet nephrotomy even if ineffectual should be nearly devoid of at least immediate mortality, inasmuch as it is the simple incision of a single cavity and not the formidable operation that it is when done for pyonephrosis.

In the two cases of nephrectomy for hydronephrosis under consideration, cure could have been obtained otherwise only by doing a nephrotomy first and then doing a subsequent reimplantation of the ureter into the bladder to overcome the low stricture.

Taking into account the double character of the operations and not only the risks of failure but also the subsequent danger of accident, it seems to me they are much better off without their worthless kidneys.

*Pyelonephritis.*—I have had under my observation only one case of acute pyelonephritis which I have treated by operation. Some of the cases I have observed have occurred in septicemia and have been simply a part of the general infection; others have occurred after operations done as a rule for obstruction upon the genito-urinary tract. These latter represent as a rule the ascending type of infection. In most of these no further operative procedure was indicated.

One case, however, came under my observation in the Roosevelt Hospital not long ago and was overlooked because the urine was not examined. This case was an alcoholic with hypertrophic cirrhosis of the liver, who was operated upon for deep urethral strictures with absolute retention of urine. Soon after the perineal drain was removed he developed fever, acute delirium and increasing jaundice with tenderness in the right hypochondrium. His symptoms were attributed to alcoholism and the cirrhosis of the liver. The urine was all lost until finally a specimen was collected by holding a catheter in the bladder. This specimen showed the characteristic signs of acute suppuration of the kidney, but it was too late, the patient being already moribund. On autopsy evidences of acute septicemia were found and well-marked acute pyelonephritis of the right kidney. The left kidney only showed signs of toxic nephritis. I believe that the right kidney should have been removed in this case, inasmuch as it was the cause of his general sepsis. The outcome might have been the same but he would have been given the chance without which his case was hopeless. In this case the affection was unilateral. In looking over the reported cases of pyelonephritis one is struck with the great frequency in which the disease occurs on one side only. In seven of Israel's eleven cases one kidney only was affected.

The apparent frequency may, however, be due to the greater number of cases of unilateral disease reported, inasmuch as they are better fitted for operation.

The danger of nephrectomy for single pyelonephritis is not so great as is generally supposed, since the operation can be easily and quickly performed. The resulting improvement is sometimes wonderfully rapid and satisfactory as the following case shows:

*Acute Pyelonephritis (right); Hematogenous Infection, Puerpural Sepsis. Nephrectomy. Cure.*

*Case VIII.*—H. S., housewife, twenty-three years of age. Finn. Admitted to the Roosevelt Hospital July 14, 1902.

Previous history negative. Six weeks before admission she had a miscarriage at six and a half months. In a few days puerpural sepsis developed. At the end of the second week of her puerpurium she complained of pain and tenderness in the right flank. Her condition became more septic while at the same time the signs of uterine inflammation cleared up. In the four weeks between the onset of the kidney trouble and her admission her temperature ranged between 99° and 106°F., and was accompanied by chills. One week before admission a mass was felt in the region of the right kidney. The urine contained only a few pus cells. On admission, her general condition was poor. She looked septic and was anemic. The heart and lungs were negative. The right side of the abdomen was markedly rigid and tender, especially at the upper part. There was tenderness and a sense of resistance in the right flank but no rigidity of the muscles. No distinct mass could be felt, probably because of the rigidity of the anterior abdominal muscles.

The urine was acid, its specific gravity was 1.020, it contained a faint trace of albumin, a few red cells and many pus cells. No casts were found. The blood count showed 12,000 leucocytes.

On account of the preponderance of the abdominal symptoms I determined to first make a small exploratory abdominal incision, which would also enable me, if necessary, to ascertain the condition of the opposite kidney.

Operation, July 15, 1902. A two-inch incision was made at the border of the right rectus and the diagnosis confirmed. A transverse lumbar incision five inches in length was then made and the kidney removed. The entire operation only consumed thirty minutes and there was practically no shock or hemorrhage. The kidney was studded throughout with miliary abscesses. The fatty capsule was infiltrated and inflamed but stripped off readily.

The temperature of the patient immediately fell to normal and, except for a rise to nearly 101°F. on the third day, remained so, and she left the hospital entirely well on August 1, 1902, just seventeen days after her admission. She is still in perfect health.

In some of these cases nephrotomy does result in an eventual cure, in others secondary nephrectomy has to be done. The great advantage that nephrectomy has over nephrotomy, namely the removal of the entire source of sepsis, more than compensates for the loss of the kidney.

With a severe pyelonephritis in one kidney and only a moderate infection in the other, nephrectomy is probably still the better operation, inasmuch as it relieves the slightly injured kidney of the toxins which would otherwise be eliminated through it.

Nephrotomy is indicated if the infectious process becomes localized in distinct portions of the kidney, and in cases of double pyelonephritis when the condition of the other kidney is doubtful.

*Calculous Disease.*—Nephrotomy or nephrolithotomy for stone will always be the ideal operation, especially if the incision in the kidney can be closed.

There are, however, cases of renal calculus in which the morbid changes in the kidney are so great that they can well be classed with cases of hydro- or pyonephrosis. Often a distinction can only be made by determining the original disease; for calculi are not infrequently formed in pyonephrotic kidneys as a result of the inflammatory process, as in Case I, and, on the other hand, calculi by obstructing the ureter or the infundibula may give to general or localized dilatations of the kidney, producing a hydronephrotic condition; or, as is more likely in these cases, infection supervenes with its concomitant production of new tissue causing contractions and dilatations until finally a characteristic pyonephrosis is produced.

In order to fully understand the difficulty one has to meet in removal of some calculi from the kidney let us glance for a moment at the processes which go on in these cases. We not infrequently see large stones which form almost complete casts of the pelvis and infundibula of a kidney, I show you two such calculi to-night. In removing such stones there is usually found in the calices between the papillæ and the calculus a greater or less amount of calculous sand. Often this débris is not merely sand but forms of a flat plate which is separate from the main calculus. This plate may increase in size and form a separate calculus of considerable dimensions, as is well seen in the specimen from Case IX. As the secondary calculus increases in size it dilates the calyx and at the same time the neck of the calyx or infundibulum becomes contracted and may even become shut off and thus the secondary calculus becomes incased in a secondary pyonephrotic dilatation of the kidney substance. Even if this last does not occur the secondary stone as a rule is too large to be removed with ease through the infundibulum.

Suppose now we have made an incision through the kidney substance large enough to remove the main calculus and the blood is pouring, as it usually does, from the cut surface so that the whole field is obscured, how can we be sure of finding all the stones that may be in any of the calices? As an example of this difficulty one of the calculi in the kidney removed from Case IX was not found when the kidney was opened and examined after the operation, it not being discovered until a further incision had been made some months later.

Although I have never lost a case of nephrotomy for calculus, yet I always approach one with more uneasiness than a case for nephrectomy. In some the hemorrhage is insignificant, in others I have seen the patient almost exsanguinated in the time taken between the extraction of a large irregular calculus and the searching for and extraction of the small secondary ones.

The removal of even a single stone is not always followed by complete recovery. I have at present under my care a young married woman twenty years of age, who had a single stone removed from her left kidney six years ago by one of the most careful and skilful surgeons in this city. After a rather protracted convalescence from a urinary fistula and a secondary operation the wound healed. Three years afterward it broke open for a few weeks and again healed of itself. Eight months ago she became pregnant and for four months up to her operation three weeks since she suffered from attacks of pain and distention in the kidney. The kidney was large and there was a small quantity of pus in the urine when I first saw her some eight weeks since, but I tried to have her go through her confinement without operation, hoping that with the emptying of the uterus the damming of the kidney might be relieved. However, I finally had to incise the kidney on account of a very severe attack. This relieved her of a certain amount of septic absorption as well as her pain. On opening the kidney a large quantity of purulent urine escaped and there seemed to be a large continuous cavity; no stones could be felt.

She was prematurely delivered a few days ago and nearly died of a post-partum hemorrhage. which may have been due to the long continued septic absorption from the kidney.

It would have been better for this patient to have had her kidney removed with the calculus. But the operator would probably have never forgiven himself had he done so.*

The following case is reported in detail as it possesses considerable interest in being as it seems to me at the border line between nephrotomy and nephrectomy:

*Multiple Renal Calculi; Obstruction of Ureter; Pyonephrosis. Nephrectomy. Cure.*

*Case IX.*—B. C., housewife, twenty-nine years of age, married. Admitted to the Roosevelt Hospital August 11, 1902. Two children, the youngest nine months old, which she was still nursing. Ten years before admission during a period of several months she had severe pains in the left lumbar region. Since that time there were very few symptoms, for the most part only amounting to discomfort and occasional pain after exercising.

For several years she had given up riding. For at least two years the urine had been cloudy and contained pus. For several months she had been under treatment for cystitis and came to New York for further advice.

On admission, her general condition was excellent. Heart and lungs were normal. The abdominal walls were thick. The left kidney was palpable and tender on deep pressure. The right kidney could not be felt.

The urine was acid, and contained a large quantity of pus, otherwise it was normal.

Cystoscopy showed an apparently normal mucous membrane. The left ureter was catheterized and purulent urine obtained. A specimen was not obtained from the left kidney as she could not stand further instrumentation, not having an anesthetic.

A radiograph of the kidneys was taken by Dr. Johnson, which showed beautifully a large mass of calculi, apparently three in number in the left kidney. None were apparent in the right kidney. Operation was performed August 12, 1902. The kidney was exposed through a six-inch transverse lumbar incision. It was large and somewhat distended. Two large calculi could be easily felt in the pelvis. In places the cortex was thinned out over what were evidently cystic dilatations of the calices. In one of these a calculus could be felt.

The condition of the kidney was such that I felt very doubtful in regard to the ultimate result of a nephrotomy and consequently removed the kidney without incising it.

There was no shock following the operation. The urine at once became free of pus and was passed in normal quantity. The wound was entirely healed in nine days. She has enjoyed the best of health since the operation and has not had a symptom of any kind.

On opening the kidney two stones were found in the pelvis, one was an irregular branching calculus weighing when dry 13.7 grams and the other a smooth elliptical one weighing when dry 3.9 grams. The latter acted as a ball valve engaging in the mouth of the ureter and had worn a smooth somewhat concave facet on the large one. In one of the distended calices a third stone was found which weighed 0.9 gram. On cutting the kidney again the other day I found a fourth in a calyx in the lower pole which weighed 0.3 gram.

The mucous membrane of the pelvis was thick and velvety, a section from the cortex showed marked parenchymatous degeneration. There was, however, much secreting tissue in the kidney as you can well see from the specimen, and I felt that I had removed a much better kidney than I had supposed it to be when handling it in the wound. Nevertheless, if I had been satisfied with a nephrotomy I am positive that I should not have obtained a cure inasmuch as it would have been almost impossible to have located the little stone in the pole of the kidney. Even if one had found no other stone it would have been difficult to find, but with three stones found it would be ten to one that it would have been overlooked.

As I have before stated I consider this case in the *Grenzgebiet* between nephrolithotomy and nephrectomy. I have removed larger single stones than the largest in this case, but from an otherwise practically healthy kidney. The presence of cystic dilatations in an affected kidney is the indication for nephrectomy.

The dangers of the so-called conservative operations, namely nephrolithotomy and pyelolithotomy in severely infected kidneys is emphasized by Israel's statistics.

In 13 cases so treated the mortality was 38.4 per cent., while 15 nephrectomies for the same condition gave a mortality of 16.3 per cent. On the other hand in aseptic and very slightly infected kidneys in which the ideal operation of suture of the kidney could be done the mortality was only 3.4 per cent. in 29 cases.

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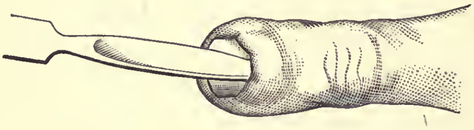
* Since the reading of this paper this kidney has been successfully removed. J. A. B.

## AN OPERATION FOR PARONYCHIA, OR "RUN-ROUND."

BY SINCLAIR TOUSEY, A.M., M.D.,
OF NEW YORK;
PROFESSOR OF SURGERY AND RECTAL SURGERY, NEW YORK SCHOOL OF CLINICAL MEDICINE; ATTENDING SURGEON, ST. BARTHOLOMEW'S CLINIC.

It is a matter of constant surprise to me to see how many skilful physicians and surgeons treat cases of paronychia by making an incision through the flesh of the finger into the pus sac at the root of the nail. Others again remove the whole nail or make an incision across the nail and remove its root. These last two procedures are based upon the correct principle. The infection and pus are in the groove in which the root of the nail is lodged, and by these operations this groove is opened and may be disinfected.

The author's operation consists in separating the attachment of the cuticle to the dorsal or exposed surface of the nail to a sufficient extent to permit the escape of the pus and the introduction of a stick of nitrate of silver to disinfect the sulcus. Its advantages over partial or complete removal of the nail are the simplicity and ease of its performance (no anesthetic, no instruments except the point of a knife) and its entire painlessness. There is not a drop of blood drawn, and a rapid cure may be expected, most cases being entirely well in three days.



Of course, there are some cases of long standing in which the nail has separated from its bed and had better be removed, either wholly or in part. Incision into the flesh is always radically wrong. Even though the pus may be nearly a dram in amount, it is not in a cavity in the flesh but in a groove which may be opened by an entirely painless procedure, which leaves no disfigurement.

I am indebted to Dr. William S. Terriberry for the drawing illustrating this paragraph.

103 West Seventy-sixth Street.

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## THE GEOGRAPHIC DISTRIBUTION OF UNCINARIASIS IN THE UNITED STATES.

BY WILLIAM RIDGELY STONE, M.D.,
OF NEW YORK;
ASSISTANT ATTENDING PHYSICIAN IN THE MEDICAL DEPARTMENT OF THE CORNELL UNIVERSITY MEDICAL SCHOOL DISPENSARY, NEW YORK.

Until very recently, this disease was looked upon as a medical curiosity in this country; but the introduction of laboratory training and the more thorough knowledge of the helminths by the medical profession at large, have brought to light many cases which would have escaped the notice of the practitioner of the decade gone by. The literature of to-day is comparatively small with regard to the reported cases, but very shortly we may expect to see an entirely different state of affairs. With the acquisition of our insular holdings in the Far East, and the returning of troops from Cuba, Porto Rico, the Philippines, and China, where uncinaria abound, there is every reason to suppose that we shall soon find that many cases will develop and become speedily recognized.

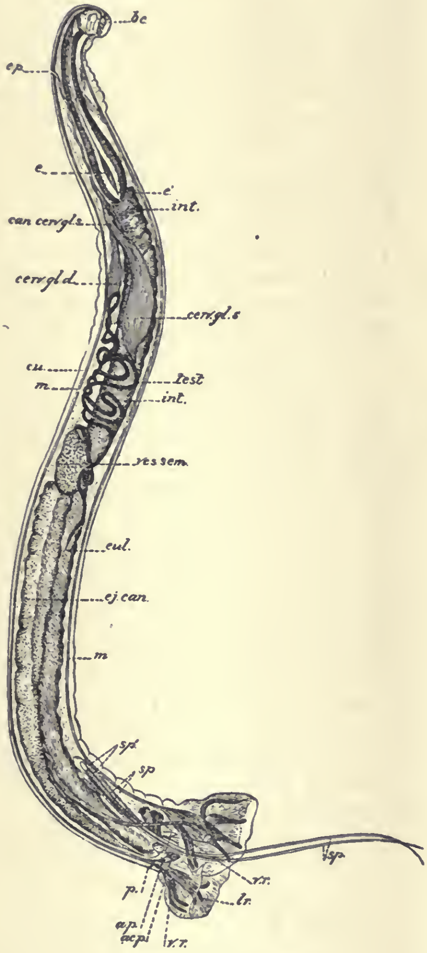
As to the prevalence of the disease in this country, comparatively little is actually known. A very interesting and convincing suggestion has been made by Ch. Wardwell Stiles of the Bureau of Animal Industry at Washington, D. C. He believes that it will be demonstrated that many of the obscure cases of anemia that occur in the Southern States, where the curious habit of clay-eating exists, are undoubtedly due to the infection of these individuals by uncinaria. As early as 1821, Chabert refers to a custom of the negro slaves in Louisiana, who would eat dirt and produce an illness which would permit them to escape from work. Later in 1850, Duncan describes the existence of the same state of affairs among the negroes of the Georgia plantations. His description of their symptoms corresponds quite closely to those of uncinariasis.

This curious custom of clay-eating prevails in a number of the Southern States to-day. Some of the inhabitants of Georgia, Louisiana, Florida, the Carolinas, Virginia, and West Virginia especially, and also in Maryland and Tennessee, the whites as well as the blacks, are addicted to clay-eating. Previous to the war of 1861 the so-called "poor white trash," were frequently addicted to the clay-eating habit. Stiles thinks that their well-known laziness was due to the ingestion of and the infection by the hookworm.

The outbreak of uncinariasis among the workmen employed on the St. Gothard Tunnel, which has long since become classic, has raised the interesting question as to whether the building of the Subway in our city will, in the course of time, result in the report of cases of uncinariasis among the laborers employed on this undertaking. Not long since, a physician of Brooklyn, reported the finding of a rhabditiform embryo in the earth taken from the subway excavations. Whether or not it was an embryo of the species under consideration was not determined, nor could it be until it was hatched out into the adult form, as many helminths take on the rhabditiform condition during embryonic life. Personally I do not believe that the soil of this part of the country contains the *Uncinaria duodenale,* but inasmuch as the large majority of the laborers employed in the work of excavating are Italians, who have but recently come to this country from a land where the disease is well known, it is easy to see how cases may eventually develop among them. If, however, the *Uncinaria Americana* makes its habitat in the soil of this State, we may have the disease develop among us.

The first case to be reported where the parasite was recovered from the intestinal tract by an American observer, was in 1864. In writing of parasites, F. Herff (Texas Med. Jour., Vol. 9, 1894) mentions the finding in the intestinal tract of a Mexican lady, who had died from anemia and dysentery, of certain worms which he thought were *Uncinaria duodenale.* From his description of the case, it was in all probability true uncinariasis. It is true that this could scarcely be considered as a case occurring in this country, for the probabilities are that the disease was contracted in Mexico where the parasite is now known to be exceedingly common. Since that time there have been a number of cases reported where the parasite has been recovered from the intestinal tract.

Fig. 1.



Male hookworm (*Uncinaria duodenalis*) of man: *ac.p.*, accessory piece to spicules; *a.p.*, "anal papilla;" *b.c.*, buccal capsule; *can. cerv. gl. s.*, canal of left cervical gland; *cerv. gl. d.*, right cervical gland; *cerv. gl. s.*, left cervical gland; *cu.*, cuticle; *cul.*, cul de sac of testicular tube; *e.*, esophagus; *e'*, posterior end of esophagus; *e. p.*, ventromedian excretory pore; *ej. can.*, ejaculatory canal; *int.*, intestine; *l. r.*, lateral ray of bursa; *m.*, muscular layer; *p.*, lateral præcaudal papilla; *sp.*, spicules; *sp'*, anterior end of spicules; *test.*, testicular tube; *ves. sem.*, vesicula seminalis; *v. r.*, ventral rays of bursa. Greatly enlarged. (After Schultheis [copied from Blanchard, 1888, p. 755, fig. 370].)

Charlotte Schaeffer describes the results of an attempt at colonization in the State of Chiapas, Mexico, in which the greater portion of the colonists died as the result of an illness simulating the hookworm disease. She also remarks that the native Indians die in great numbers from the same disease.

Up to the present date there have been but 38 undoubted and indisputable cases of uncinariasis reported in this counry. These, with the exception of Capps' case, are reported and collected in the report of the Bureau of Animal Industry by Ch. Wardwell Stiles. The cases show that uncinariasis has existed in Louisiana, Florida, Texas, Alabama, Georgia, South Carolina, Missouri, Mississippi, Virginia, Maryland and New York. While at the last meeting of the American Medical Association, held in Saratoga, the author was told of a case where the parasite had been recovered from the intestinal tract by Dr. A. Smith, of the University of Tennessee, in a longshoreman who had never been out of the State of Tennessee. The patient had presented symptoms typical of the disease.

The most recent case to be reported is described by J. A. Capps, of Chicago (*Jour. of Amer. Med. Assn.*, Jan. 3, 1903). It is of interest at the present time in the light of the proposition of the government to build the Trans-isthmian Canal through the Panama route. It was while in that region that the patient contracted the disease. This should prove a warning to the United States and be a forerunner of what we may expect, if proper precautions are not taken to prevent the contraction of the disease by those who are to be occupied in the excavation of the canal.

Of the 39 cases in which the author has examined into the history of the contagion, at least 18 were certainly contracted outside of the United States. In New York, there is but a single case which can be said to have been infected within the boundaries of the State; that of the boy who received his infection through contact with an Italian workman employed in his father's brick-yard. This laborer brought the worms to this country from his native land.

That the new variety of the parasite, described by Stiles is capable of producing the disease is evidenced by the reports of cases by Dr. John Guiteras of Havana. These examples occurred in Cuba, though the infection took place in Florida.

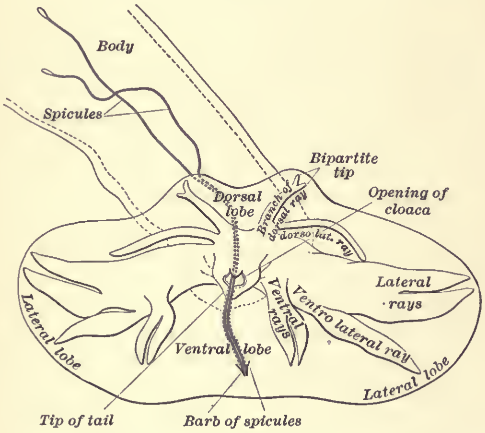
So far, Texas has given us the greatest number of cases. In a personal letter to Dr. Stiles, Dr. Allen J. Smith, of the University of Texas, states that he found the hookworm present in the stools of eight of the students of that university. These data were obtained from the examination of eighty separate specimens. It would appear from this statement that ten per cent. of all the students were infected.

Dr. Bailey Ashford of the United States Army, while at Glen Island, New York, in the summer of 1900, examined the stools of several Porto Ricans, of a colony of twenty, who were encamped there, to exhibit the industries of Porto Rico, and found that four of them were infected with the parasite. He thinks that he would have found three-fourths of them to be infected had time permitted his examining all of the colonists.

In 1896, F. G. Mohlau, reported five cases from Buffalo, three of which were traced to a source outside of this country. One, a man of fifty-eight years, had been employed on the St. Gothard tunnel. In the other suspected regions, there have been one or two cases reported.

A point of interest in uncinariasis and which will doubtless be broached in the near future, is the question of infection of the human species with the *Uncinaria canina.* This species is exceedingly common in the dog, and quite closely resembles the *Uncinaria duodenale.* It abounds in large numbers in and about Washington, D. C., both in Maryland, and Virginia. Some authorities hold that it may be communicated to man, and so, it would not be surprising that cases of this variety would soon be found in the human intestinal tract. The parasite is much larger than the *Uncinaria duodenale.*

Fig. 2.



The caudal end of the New World male hookworm (*Uncinaria Americana.*) The bursa is spread out to show the arrangement of the rays. Note the short dorsal lobe which is subdivided, forming two lobes; note also the indistinct ventral lobe connecting the two lateral lobes. The dorsal lobe is thrown back over the body. Greatly enlarged. After Stiles.

Two varieties of the hookworm are found in man, *Uncinaria duodenale* and *Uncinaria Americana,* so that it would seem well to describe them in order that they may be more easily recognized. The best description of the parasites, is to be found in the reports of the Bureau of Animal Industry, for 1901, which is as follows:

The male *Uncinaria duodenale*: body cylindrical, somewhat attenuated anteriorly, buccal cavity with two pairs of ventral teeth curved like hooks, and one pair of dorsal teeth directed forward; caudal bursa with dorso-median lobe, and prominent lateral lobes united by a ventral lobe; dorsal ray divides at point two-thirds its length from its base, each branch being tridigitate; spicules long and slender. The female; 10 to 18 mm. long; vulva at or near the posterior third of body. Ova, ellipsoid, 52 by 32 $\mu$, laid in segmentation. Development direct, without intermediate host.

*Uncinaria Americana:* Body cylindrical, somewhat attenuated anteriorly. Buccal capsule with a dorsal pair of prominent semilunar plates or lips, and ventrally pair of slightly developed lips of the same nature; dorsal conical median tooth prejects prominently into the buccal cavity. Male, 7 to 9 mm. long; caudal bursa with a short dorso-median lobe, which often appears as if it were divided into two lobes united ventrically by an indistinct ventral lobe; common base of dorsal and dorso-lateral rays very short; dorsal ray divided to its base, its two branches, being prominently divergent and their tips being bipartite; spicules long and slender. Female, 9 to 11 mm. long; vulva in anterior half of body but near the equator. Eggs, ellipsoid, 64 to 72 $\mu$ to 40 $\mu$ broad, in some cases partly segmented in utero, in other cases containing a fully developed embryo when oviposited.

Too much care cannot be taken in the identification of the parasites and their ova in the feces, as will be seen from the appended case. Only by the merest chance was this case of pseudoparasitism saved from being reported as a case of true uncinariasis. Last summer, while working in the laboratory for Clinical Pathology in the Cornell University Medical School of the city, there was received as a contribution to the collection of parasites, a bottle containing what appeared to be minute worms with hook-like extremities and their ova. The latter, were ellipsoid, somewhat large (suspiciously so), and of a dark red-brown color. The bottle was labeled "*Uncinaria duodenale* and their ova." They purported to have been found in the stools of a young man suffering with symptoms of uncinariasis, which had been contracted in the Philippines. Under the microscope, the so-called worm was found to possess some similarity in shape to the hookworm, but appeared to be composed of vegetable matter. At first the origin of the matter was puzzling, but later it was identified as the hairs of the strawberry, while the putative ova were nothing more or less than the seeds of the same fruit.

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66 West Forty-ninth Street.

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## LUNG SURGERY: HISTORICAL AND EXPERIMENTAL.*

BY BENJAMIN MERRILL RICKETTS, PH.B., M.D.,
OF CINCINNATI, OHIO.

A knowledge of the comparative anatomy of the lung is essential, especially for experimental work. In reptiles only one surface of the capillaries is exposed to the air, while in man all sides are exposed to air. The lung of the water-dog (*Necturus lateralis*) consists of two elongated cylindrical bodies. Both the outer and inner surfaces are smooth. There is both an arterial and venous system. These are so arranged that each vein is at right angles to the corresponding artery. Snakes have only one lung (the right). It is an elongated cylindrical body, and smooth two-thirds of its length. The posterior third is divided into numerous air cells, which communicate with a central cavity without any apparent communication between the air cells.

In birds the bronchus, after penetrating into the lungs, breaks up into numerous tubular passages. These passages are not true bronchia, since the alveoli or true lung structures arise directly from them. The principal bronchia communicate by large rounded openings with large air-bags situated in the abdomen and in the hollow bones. These air-bags should be considered as part of the lungs, as they are directly connected with the bronchi. The air-sacs do not communicate with one another.

The lung of man receives its blood from two system,s the bronchial and the pulmonary. In the first, the venous radicles from the bronchioles empty into the vena pulmonalis, and the arterial branches into the vena azygos. Hence in all operations involving the bronchus the latter should be ligated transversely, whether it be transverse to the lung or not. The larger pulmonary arteries and veins are situated in the intralobular connective tissue. They subdivide into minute vessels, each encircling an alveolus, and then split up into a very fine capillary network, only separated from the air by the exceedingly thin alveolar membrane. Only a single mesh of capillaries exist in an interalveolar septum.

Malpighi, 1661 A.D., was the first to discover them. He first found them and the lung cells in the mesentery and lungs of frogs.

Lymphatics rise from the alveolar septa and communicate directly with the alveolar cavity by stomata in the alveolar walls. The lymphatics form a plexus in the submucous tissue accompanying the branches of the bronchia, as well as the pulmonary veins and arteries emptying finally into the bronchial glands at the roots of the lung.

The pulmonary neve plexi are formed from branches of the vagus and sympatheticus. The filaments of these plexi follow the ramifications of the bronchia, and finally become lost on them in the parenchyma of the lungs.

Monkeys have an accessory lobe called the azygos lobe. This is supplied by an accessory bronchus, which arises from the right bronchial trunk near the point where the first branch is given off. The bronchus of the sheep grows from the trachea direct.

Man's septum bronchiole is placed to the left of the longitudinal axis of the trachea. For this reason foreign bodies lodge more frequently in the right bronchus, which is shorter than the left. This is also why the right lung respires before the left at birth. There are, sometimes, three branches of the bronchus.

The sensibility of the bronchia is thought to be slight. Some animals have one of more lobes, having as many as five on one side. Some have fissures while others have not. The normal number of lobes in man on the left is two, while three are upon the right. The fissures are many times so high posteriorly that the middle lobes will prevent palpation and auscultation of the posterior surface of the upper lobes.

*Experimental Historical Observations.*—Davidson's 1795, on the anatomy and pathology of the pulmonary system is one of the first contributions to this subject. Harlan, 1819, showed by experiments upon living animals that the circulation of the blood through the lungs is immediately and entirely suppressed during expiration. Cauman, 1848, said that the capillaries of the lungs do not anastomose. Bert, 1869, contributed his research on the elasticity and contractility of the lungs, and the connection of these properties of the lungs with the pneumogastric nerves. Brown, 1884, showed the alveoli of the lungs to contain squamous epithelium, and in 1885 that the bronchia contract under certain conditions. Crevilheir by dissection of a fetus showed that one or both apices may extend along the cervical spine. Here it may be remarked that the fact that the pericardium has never been found absent should be remembered in eliminating its absence in herniated lung of the left side. It should also not be forgotten, that the lower costal cartilages on the left side in women are rare, and that the cervical ribs are also rare. There being but two cases of the latter reported.

*Ligatures (Historical).*—Susrutus, 1,500 B.C., applied ligature to the umbilical cord of new-born babies before severing it. Hippocrates was familiar with ligatures. Archigenes, 100 B.C., was probably the first to use ligatures in amputations. Celsus, 30 B.C., used linen thread. Galen, 131-211 A.D., was partial to silk or fine catgut for ligating the proximal ends of injured vessels. Alfonso Ferri, fifteenth century, preferred a needle three inches long, curved only at the point with the eye at the opposite end. Fabricius, the elder, 1537-1619, mentions the use of animal sutures for intestinal wounds. Fabricius, von Hilden, 1560-1634 A.D., was first to introduce hemp for ligatures into Germany. Fabricius of Aquapendente, 1647, recommended metallic sutures. Animal sutures were introduced into America by Dr. Physick in 1814. Wardorp used silkworm gut for ligatures as early as 1796, and McSweeney in 1818. Dr. Ishigaro, a Japanese surgeon, used a ligature made from the tendon of a whale. Marcy, 1871, and Croft, 1880, employed kangaroo tendons. Silk, catgut and animal tendons are preferable for sutures and ligatures in the lung.

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*Abstract of a paper read before the Western Surgical and Gynecological Association, St. Joseph, Missouri, December 29 and 30, 1902.

*Pneumonotomy, Pneumonectomy, Pneumonopexy.*—In this head are included all cutting operations, such as amputations, incisions, removal of foreign bodies, opening of abscesses, gangrene, cysts, etc.

Fabricius, 1646, records cases in which large portions of the lungs were excised with recovery of the patients. Baglion, 1714, advocated operations on the lungs, and Barry, twelve years later, advised operations on the lungs for consumption. A fellow-officer with General Wolfe, wounded at Quebec, 1759, is said to have recovered, after the removal of a large portion of the injured lung. Hale, 1851, referred to a case of penetrating wound of the chest in which he removed a piece of the protruding lung. Little was said concerning operations on the lung for more than a century later, when Richard, 1880, reported a case, penetrating wound of the thorax with immediate pneumocele. Excision of the lung was employed, and the patient recovered. Thomas, 1885, suggested and treated cysts of the lung by opening and drainage. Bull, 1891, treated two cases of gangrene by operation. Tuffier, in his Moscow address, analyzes 306 pneumonotomies, as follows: metapneumonic gangrene, different causes, 55 operations, 10 recoveries. Forty-nine operations for abscess, 23 per cent. succumbed. Three operations for incipient tuberculosis foci were cured. Twenty-six operations for cavities, 13 recoveries. Twenty-nine operations for aseptic lesions, 22 recoveries, or 75.8 per cent. Sixty-one operations for hydatids, 55 recoveries. Two hundred and fifteen operations for septic lesions, 140 recoveries, or 64.8 per cent. Tubercular cavities, 36 operations, 36 deaths; abscess, 49 operations, 12 deaths; bronchiectasis, 45 operations, 13 deaths; foreign bodies, 11 operations, 4 deaths; gangrene, 74 operations with 30 deaths; actinomycosis, 1 operation, recovery. Total, 306; cured, 217; died 88.

B. Bell advises and opens abscess in any locality of the lung with more or less success.

Abnormalities.—There are many types of abnormalities of the lungs, any one of which might greatly influence surgical intervention. There may be one, two, three, four, five, or even more lobes or there may be the entire absence of lung tissue on either side. The blood vessels, nerves and bronchi vary greatly in number and position, so that there is no way of determining their presence or absence without opening the chest before or after death. General body deformity is also many times a cause for variations from the normal type. The diaphragm is often entirely absent in man. Hoffman, 1783, reported a case of diaphragmatic junction with the lung, and Broca, 1852, reported one with complete separation of the two lobes of the lung. There have been about fifty interesting papers constructed on the subject of hereditary defects of the lung.

Atelectasis—Apneumatosis.—Atelectasis is collapse of the lung before birth, and due to many causes, such as continued compression of the lung by fluid, new growth, or deformity.

Apneumatosis is collapse of the lung after birth, due to the same causes. Joerg, 1832; Barlow, 1841, and Spangenberg, 1844, each record such cases. More than thirty observers have reported upon this subject in the various journals.

*Herniæ or Pneumocele* is of many varieties and degrees. Lung tissue may protrude from an opening in any portion of the chest. It may be congenital or acquired: congenital, when there is defective development of the chest wall; acquired, when due to injury. Sudden herniæ have no plural sac, while those which come gradually do have a sac. If let alone, the first always have adhesions, while the latter may or may not have adhesions if let alone. Rolandus, 1499, removed a portion of a herniated lung with recovery, and he took the patient to Bologna for inspection by his colleagues. Tulpius, 1674, ligated and cut off three ounces of the lung which protruded. Knox reports two cases of hernia of the lung in the neck. Couvey reports fourteen such operations with two deaths. Morell-Lavallie, 1824, reported eight with one death. Of twenty thousand wounds of the chest, during the Rebellion, there were only seven herniæ of the lung.

*Abscess* is the most frequent surgical lesion of the lung, and recovery more certain in the acute form, when operated upon. Balgius, 1710, was one of the first to treat tubercular abscess of the lung. Bligny, 1720; Berry and Boerhave, 1726, each advocated opening tubercular abscesses of the lung.

Comparadon, 1769, treated a case of abscess of the lung and cured it by surgical intervention. Gumprecht, 1793, treated an abscess of the lung surgically. Richeraud, 1812, successfully incised an abscess of the lung with recovery. There are many other cases of abscess of the lung, tuberculous and otherwise, which have been operated upon, many of which have recovered. Abscess of the posterior surface of the lung is the most inaccessible form. Resection of one or more ribs is necessary, and should be done that location of the abscess may be determined by palpation. There are several hundred operations for abscess of the lung reported, with about 66 per cent. recoveries. Block, 1881, opened an abscess of the lung, patient died. Coroner censured him for operating, and Block suicided by pistol.

*Gangrene* is rather frequent and due to many causes, such as injury, syphilis, abscess from any cause, foreign bodies, and the acute inflammatory diseases of the respiratory system. Pneumonia is the most frequent cause, and pressure from aneurismal or other intrathoracic tumors, which interfere with the blood circulation. The most frequent site is the posterior aspect of the upper portion of the lower lobe. The mortality of gangrene of the lung, if let alone, is from 85 to 90 per cent., while it is only about 40 per cent. if subjected to surgical operation. The treatment is very much the same as for abscess of the lung. All gangrenous portions should be removed and free drainage established. There are about seventy contributions to this subject.

*Syphilis.*—Unless a syphilitic lesion of the lung becomes an abscess or gangrenous, nothing is to be done except to place the patient upon antisyphilitic remedies. There are perhaps no pathologic lesions of the lung more easily influenced or completely overcome by medicaments than those due to syphilis. It is probable that but a small per cent. of the syphilitic lesions become gangrenous or terminate in abscess. The early literature begins with Zadig, 1797, who presented a paper on diseases of the lung due to venereal causes, but little was said concerning syphilitic lesions of the lung until 1841, when Munk published his paper on syphilitic diseases of the lungs. Lagneau, 1853, published his work on diseases of the lungs caused and influenced by syphilis.

*Edema* is an effusion of serum into the submucous connective tissue. Flint says that the transudation is primarily within the air cells. The serum also infiltrating the interlobular structure. It is found in acute infectious diseases. Valvular disease of the heart is a prominent factor in its causation. Compression of the lung by a tumor of any character. Inhalation of hot or cold air or gases. Suppurative hepatitis, Hodgkin's disease, eclampsia, leucemia, anemia and chlorosis may cause it. It may be local or general and is found in persons under fifteen years of age. Muller, 1891, is one of the first to describe this most interesting condition. Anthony, 1891, speaks of a case of pulmonary edema complicating pregnancy. There have been about twenty contributors to this subject.

*Treatment of Edema.*—Phlebotomy has been advocated in acute edema. The surgical treatment is essentially the same for bronchopneumonia, hydrothorax and edema.

*Foreign Bodies* in the lung or bronchia may be removed by coughing or they may escape through the chest wall into the trachea, esophagus, into the pleural cavity and through the diaphragm, or from the subcutaneous portions of almost any point upon the body. Bird-shot may become encysted in the lung, and remain indefinitely. Experiments with the X-ray show that the position of a foreign body in the lung when expanded is changed when the chest is open and the lung contracts. Among the earliest reports of foreign bodies found in the lung is by Tillingius, 1688; Kirby, 1700; Buchtfield, 1671. These were in the form of concretions. Graham-Craig, 1834, reported a case of deposits of charcoal in the lungs of miners (anthracosis). In later years we find the report of a brass nail in the lung. Bullets of different character, one of which was impacted for forty-two years. In 1876, Johnson, of Baltimore, in the presence of Sir Morell Mackenzie, removed a toy locomotive from the subglottic cavity by tracheotomy and thyroidectomy. Weist's records of one thousand cases of foreign bodies in the lungs are exceedingly interesting. Of 177 cases, 66 were expelled with recovery; 26 died without operation, and 85 underwent tracheotomy; of the latter 66 recovered and 19 died. In 109 cases, due to watermelon seed, 70 got well without operation; three died with it; three had tracheotomy performed, of which 26 recovered and eight died. Coffee beans caused 59 cases, most of them recovered without operation. Of 371 miscellaneous cases, 263 had no operation. 109 recovered; 108 had tracheotomy, of which 77 recovered.

Of the one thousand, 93 had tracheotomy performed but foreign bodies could not be found in 73 of them. In five of these the body was expelled through the mouth after the wound had closed. In 63 of the thousand cases, hooks, etc., were used to successively remove the body. Total number of operations 338 of which 245 recovered and 93 died. The voices of 10 were lost, and impaired in 38. Laryngotomy, 36 operations; 30 recoveries; 6 deaths. Laryngotracheotomy, 26 operations; 19 recoveries; 7 deaths. Tracheotomy, 276 operations; 196 recoveries and 80 deaths. Moxley of Ironton, O. (personal communication), had a case in which the tip of a silver spray was coughed up after having been in the bronchus forty days. DeForest Willard was one of the first to open the bronchus for the removal of a foreign body, 1891. Ferguson, 1902 records a case of a Durham tube in the right bronchus, which he removed through incision in the right neck extending through the isthmus of the thyroid to a point near the bifurcation of the bronchus. The patient recovered. There have been more than seventy papers devoted to foreign bodies in the lung.

*Rupture* of the lung may be due to coughing or injury, most frequently the latter, and it may occur without injury to the chest wall. Ashhurst collected 39 such cases without fracture of the chest wall. Twelve recovered. Otis collected 25 such cases from military practice exclusive. Eleven of these recovered. Tait, of Edinburgh, 1844, records a case of rupture of the lung since which time there have been many similar cases reported, with about 30 per cent. of recoveries without operation. Ferrari, 1855, reports a case of rupture of the lung due to deep inspiration. Wallingford and Roberts, 1901, record a case of spontaneous rupture of the bronchial artery with instant death. Twenty-four papers by as many different writers constitute the literature upon this subject.

*Gunshot Wounds.*—The history of this class of wounds begins with Mallet, who in 1743 published a report of a lad, who was shot through the lung. Rigby, 1790, reported a case of recovery after the ball had passed through the lung. Hermetically closing the chest was suggested by Parré, Larry and Lamotte, and again by Benjamin Howard in 1863, just before the battle of Gettysburg. Sixty-seven cases were so treated for injured lung; 25 recovered; 42 died. Fifteen out of the 42 were found upon autopsy not to have received lung injuries. In the absence of statistics it is safe to say that the same per cent. of those who recovered (25) did not have lung injuries. It is probable that the same rule could be applied to all chest wounds, that is, only about 30 per cent. of undetermined chest wounds do not involve the lung. Dr. Orpheus Everett's name appears among those who sealed chest wounds at Gettysburg. He having closed five with death resulting in each case (personal communication). Only three recoveries took place out of 200 chest wounds at the battle of Sebastopol, treated by the administration of digitalis; while 27 recoveries ensued in 127 wounds of the same character treated by venesection. About 62½ per cent. of the wounds received during the Civil War, U. S., 1861-1865, were of the chest. The upper lobe was most frequently wounded, the ratio being 1 to 2. Of 8,715 chest wounds in the Rebellion, U. S., 1861-1865, 492, or 5½ per cent. spat blood, and 60 per cent. of the total number died.

*Lacerated and Incised.*—As early as 1777 Pew gave an account of a most wonderful recovery after a wound through the lung. Sewell, 1849, reports a case of transfixion of the chest of a youth, eighteen years old, who accidently fell on a scythe blade, the point passing under the right axilla between the third and fourth ribs straight through the chest. There was no hemoptysis, and the patient soon recovered. Brown, 1877, reports a case of a young man, who, while running to a fire, struck the pole of a carriage. which passed through the chest under the left nipple. There was no hemorrhage; the boy recovered. Casper, 1880, reports two cases of wounds of the lung; in one by a carriage pole, and the other, the end of a mast, passed through the lung. Brokaw, 1890, reports the case of a shipping clerk, who received a thoracic wound extending from the third rib to within an inch of the navel, 13½ inches long, completely severing all muscular and cartilaginous structures. In addition there was a terrible abdominal wound causing almost complete intestinal evisceration. The lung partially collapsed, the cartilages were ligated with heavy silk and hemorrhage checked by ligature, and packing gauze in the interchondral spaces. The patient was discharged in a little over a month. The only evil result remaining being a small ventral hernia.

*Polypi of Bronchia.*—Only a few cases of this type have been reported, however they exist more often than is generally supposed. They may become detached and expelled by coughing. They may partially or completely occlude the bronchial lumen. They may undergo fibrous degeneration, become infected, gangrenous or cause pulmonary abscess, or they may remain indefinitely without causing any trouble. Clark, 1700, reports one of the earliest recorded cases. Sander, 1719, reported a case of a polypus coughed up from the wind pipe. Hankel, 1837, reported cases of chronic trachitis and bronchitis due to polypi of the bronchia. Their presence when pedunculated is noticeable in the change of bronchial sounds caused by the polypi swinging back and forth. But when the bronchia is occluded the sounds will cease.

*Lymphoma* is a malignant growth rarely found in the lungs. It is generally secondary. The harder growths are yellowish, white and dry, rarely spreading beyond the capsule, and never undergo cheesy degeneration. Suppuration is indeed rare; found oftener in men than in women. Probably due to occupation. The lungs of cobalt miners of Schneeberg are said to be invariably affected with lymphosarcoma.

*Chondromata* as a rule are due to trauma and usually appear in the cartilages of the bronchia (enchondroma), but they may originate in the absence of cartilage, which is the rarest form (ecchondroma). They may be combined with sarcoma. A primary enchondroma is reported by Courment, 1895.

*Osteomata.*—Three varieties form in the lung: (1) osteoma eburneum; (2) osteoma spongiosum; (3) osteoma medullosum. All are supposed to be due to syphilis, and are found in the form of thin plates which are of slow growth. Brambella, 1895, records a case of multiple osteoma of the lung due to gout or syphilis.

*Dermoid* is rarely found in the lung. Goodlee, 1889, opened a dermoid of a lung, removed the process and drained with recovery. Sormain, 1891, and Ogle, 1896, each report a case of dermoid cyst of the lung.

*Surgical Treatment of Benign and Malignant Tumors.*—Dissection of the capsule of the tumor is not necessary. Benign tumors require no interference, except when troublesome on account of size. The treatment of malignant tumors of the lung, thus far, is very unsatisfactory as the malignant tissue cannot be entirely removed. There are many cases of sarcoma and carcinoma of the lung reported. One of the earliest publications of cancer of the lung being Bricheteau's case, 1832. Huber, 1890, is probably the first to report sarcoma of the lung. Since then there have been 26 contributions to the subject. Carcinoma is less frequent than sarcoma, there being but 19 contributions to the subject.

*Bacilli.*—*Anthrax* of the lung was discovered by Davaine and Rayer in 1850. The domesticated animals of Algiers are said to be immune to this disease. Schottmueller, 1898, reported two cases of anthrax in the human lung. One of the patients made baskets from strips of hide. In the other the cause could not be ascertained. *Bacillus œdematis malignæ* has been found in the lungs of animals. *Bacillus ærogenes capsulatus* found most frequently in cases following trauma. *Bulletin Johns Hopkins Hosp.*, Vol. 3, pp. 81-91, 1892, offers the first contribution on this subject. Ohlmacher and Loeb, 1900, have written extensively upon this subject, in the *Boston Med. and Surg. Journal,* Vol. CXLIII, p. 73, 1900. *Bacillus typhosis* (*Eberth*) has been found in abscess of the lung by Ramsey, 1890. He also found it in gangrene of the lung and spleen. It is probably of secondary and not primary origin, and, when found, is associated with tissue necrosis arising after the third week from the onset of the fever. *Bacillus pneumonia* was first described by Friedländer, and is found in alveoli exudates and in the exudates of the pleura, and pericardium in cases of croupous pneumonia. It is a short thick bacillus resembling cocci enveloped in a gelatinous capsule. Sometimes a single capsule contains two or more bacilli. *Bacillus tuberculosis,* first described by Koch in 1883.

*Parasitic Fungus (Actinomycosis)* is a vegetable parasite found in animals and men, and is supposed to be inhaled after having colonized in the mouth, probably in decayed teeth. Direct infection of the lung is very much questioned. Sebert, 1848, was the first to publish anything upon the subject. Belfield, 1879, was the first to discover this disease in America. Ponfick, 1882, was the first to recognize this disease in man. Murphy, 1884, was the first to discover this disease in man in the United States. It is said that the first case diagnosed in living man was reported on February 12, 1889, by Powell and Goodlee. Hueser, 1895, reported a case of primary actinomycosis of the lung. Benter reported one which recovered. When found in the lung the patients do badly. Twenty per cent. of the cases reported have been of the lungs.

*Aspergillus.*—Virchow first mentioned this vegetable parasite in 1856. The most dangerous of the species is the *Aspergillus fumigatus.* Wheaton mentions a case in a 2½-year-old child. There is no general infection and the examination of the sputum reveals nothing, and is said to be always secondary. Furbruiger, 1886, collected eleven cases.

*Pneumonomycosis* has been known for half a century to be causative factor in lung diseases. Bristowe, 1853, reported a vegetable fungus growing in the cavity of the lung. But its identity is uncertain. Some think pneumonosis to be an aspergillus.

*Echinoccoccus* is the tapeworm in the dog, and its larvæ enter the human body with food or water. The embryo passes through the wall of the stomach and develops in a tissue in which it becomes lodged. Todd, 1852, reported a case of hydatids of the right lung with recovery after expulsion of the cyst. Since then there have been fifty contributions to this disease of the lung. Man is not infected by eating meat containing the hydatid, because it is only the embryo of the echinococcus that is the cause of disease in man. If taken into the body in the mature state the hydatid will become encysted without injury to its host. Here it forms its eggs and thus is prepared to infect any animal into which it gains entrance. If the hydatid does not become encysted in the body it is either disgested or passed out through the alimentary tract.

*Paragonimus Westermani* is a trematode indigenous to Asia and Formosa, and especially in Formosa. It is commonly known as a lung fluke, found in both animal and man. Manson was the first to describe this parasite. It is not found in the very young or the very old, usually found in those of strong constitutions of middle life and various stations of life. Yamagiwa thinks that surgery might be tried if the exact locations of the more superficial cysts could be determined. It is becomming quite common in the United States. There have been twenty-five contributions to this subject. It is characterized by hemoptysis.

*Cysticercus* is caused by the presence of entozoons. It is the larvæ of various species of tænia (tapeworms). It is taken into the body with uncooked meat; sometimes by working or handling dirt, etc., in which feces of these animals or fowls may have been deposited. It is comparatively rare in the lung. Roelker, 1863, was one of the first Americans to contribute to this subject.

*Trichina Spiralis* is a trematode rarely found in the lung, and then only in the muscular tissue, by the microscope. The cyst is ovoid in shape, at first transparent, becoming opaque and ultimately calcifying. It is coiled and the female is larger and more numerous than the male.

Emergency surgery precedes elective surgery, and surgery of the lung is not the exception to the rule. One can hardly imagine a pathologic condition in the lung that has not been dealt with surgically, with more or less success in emergency cases. This being true, the same methods may be applied in *selected* cases, with even better results if the more modern surgical principles be employed: (1) Severing one or more of the larger pulmonary blood vessels results in instant death; (2) if death does not result within a few minutes, bleeding will be slow and gradual; (3) if bleeding be slow and gradual it may require hours or days to cause fatal exhaustion; (4) if death does not occur, until after the end of the second day following severe bleeding, infection is its cause; (5) all or a part of the escaped blood may pass through the opening in the chest into the bronchus or alimentary tract; (6) the blood may escape into the pleural cavity or cavities, pericardial or peritoneal cavity, or all, and thereby become concealed.

*Experimental Surgery of the Lung.* (Personal conclusions.) *Pneumonotomy*—(7) More definite knowledge of conditions and symptomatology is necessary that surgery of the lung may be perfected and made more aggressive and general; (8) abnormalities, congenital or acquired, must always be considered in dealing surgically with the lungs. (9) *Atelectasis* and *apneumatosis* should be cared for by relieving the compression in removing the cause; (10) the same surgical principles can be applied to the lung as other organs of the living body; (11) the bony chest may be opened for explorations of the lung with as little danger as opening the abdomen, cranium, articulating capsules, kidney, liver, pancreas, spleen, stomach, gut or hepatic ducts; (12) hermetically closing the chest is irrational, unscientific and dangerous; (13) closing the chest wound by any means does not prevent the escape of blood from injured pulmonary vessels into the pleural cavity; (14) all wounds of the chest wall, whether penetrating or non-penetrating, should be treated aseptically, and with reference to drainage; (15) no instrument or needle should be made to enter the lung tissue for exploration, or the removal of fluid, unless the bony chest has previously been opened. (16) *Foreign bodies* in the bronchia or parenchyma of the lung may be detected with a fine exploratory needle through an open chest with the lung contracted. (17) foreign bodies in the lung and bronchia when causing serious symptoms, should be removed; (18) some small foreign bodies become encysted and remain harmless; (19) The position of a foreign body in the lung changes with expansion and contraction of the lung. (20) *Hemorrhage* when due to pulmonary tuberculosis should not be allowed to become fatal without opening the bony chest, and the application of pressure by forceps, gauze or otherwise. (21) *Bleeding* of the lung from any cause will in many cases cease when the lung is allowed to contract upon itself with an open chest. (22) *Blood clots* within the pleural cavity should be removed at time they are discovered, whether infected or not infected. (23) *Blood clots* in the pleural cavity may become organized with or without adhesions of the parietal and visceral pleura, or they may become infected and cause most serious consequences. (24) *Hemoptosis* may be absent in the more severe lacerations of the lung; (25) if bleeding from larger pulmonary vessels results, forceps should be applied. If not, gauze should be securely packed in the cavity; (26) drainage of pulmonary cysts of any character can be done with the same success as in any other organ; (27) incision for drainage should be done with or without the presence of adhesions; if without adhesions, the opening in the chest should be at lowest point of pleural cavity for gravity drainage; (28) many incisions of the lung may and should be made with or without even local anesthesia; (29) it is probable but a few will necessitate the use of general anesthesia. (30) *Abscess* of any character and of any location in the lung should be found and opened. (31) *Gangrene* of the lung demands most radical surgical measures, such as opening the chest drainage, and the removal of all necrotic tissue. (32) *Polypi of bronchi* seldom necessitate removal, but they may cause conditions which may require surgical intervention.

*Pneumonorrhaphy.*—(1) Silk, silkworm-gut and animal tendons are the most desirable materials for lung surgery; (2) absorbable sutures and ligatures are as a rule not to be relied upon as to strength and durability; (3) silk and silkworm-gut may become encysted in the lung, and remain harmless; (4) the tug, and a combination of the tug and tobacco pouch sutures constitute the most desirable ones to use in the lung; (5) ligatures and sutures may be dislodged by sudden expansion of the lung due to sudden closing of the opening in the chest wall; (6) the blood vessels, bronchiæ and lung tissue should be ligated separately, great care being taken not to include too much tissue of any kind in one ligature; (7) needles to be employed in lung tissue should be round, with a rounded point. They should never have a sharp point or sharp edges; (8) not all ruptures, punctures or lacerations of the lung require suture, or any surgical intervention whatever. (9) *Many lacerations* of the lung without fracture of the bony chest can and should be treated by suture, compression with gauze or forceps. (10) *Puncture* of the lung from any cause (such as stab and gunshot) resulting in hemorrhage, should be treated by opening the chest, and the application of ligature or compression. (11) *Rupture* of the lung should be treated as laceration.

*Pneumonectomy.*—(1) A portion or all of one lobe, or the entire right or left lung may be removed without causing death. (2) *For complete or partial lacerated* portions of the lung, when severe, pneumonectomy is necessary and should be done. (3) *Gangrene* of the lung requires in many cases removal of all narcotic tissue. (4) *Hernia* of the lung when sudden and of but few hours duration should as a rule be amputated, and the stump fixed in the *chest wall* as there is no sac. (5) *Hernia* of the lung, coming on gradually, has a sac, and should be returned to the pleural cavity, if possible, without amputation.

*Pneumonopexy* (1) is the safest and most rapid way of dealing with the stump of lung tissue in the majority of cases necessitating excision for any cause; (2) adhesions of the parietal and visceral pleura have without exception taken place whether they have been lacerated or incised wounds, with or without suture; (3) the degree of adhesion, corresponding with the degree of injury; (4) cysts of the lung of any character can best be drained through viscera-parietal adhesions. In the absence of adhesions the wall of the cyst may be sutured to the edges of the opening in the chest wall, drainage to be at once accomplished or at some subsequent time.

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## REPORT OF A CASE OF ONE-SIDED DISLOCATION OF THE MANDIBLE. REDUCED BY A NOVEL MANIPULATION.*

BY FRANK WOODBURY, M.D.,
OF PHILADELPHIA.

The subject of this communication may, at first sight, appear to be outside the limits of our work and I am conscious of some appearance, at least, of impropriety, in presuming to take up the time required even for a very brief communication, as this is intended to be. It would naturally belong to a Section on General Surgery, but as such a body has not yet been organized in the College, we, certainly, shall not be criticized for encroaching upon the domain of a sister section. Moreover, if we consider the subject a little more closely, in the light of embryology, we are confronted with the fact that the mandible, with the bones of the palate, nose, and middle ear, form a group intimately associated in origin and development, and therefore they should naturally be studied together. Finally, I think that its appropriateness will at once be conceded when I adduce, as a concluding argument, the fact that a case has been reported by Guignier in which dislocation of the lower jaw occurred during a laryngoscopic examination—and that occurred long before Kirstein's method had been suggested. As what has happened may happen again, it may not be amiss for the Fellows to consider the subject of dislocation of the mandible and the best methods for its reduction *secundum artem*.

I submit the following very brief report of a recent case:

Annie B., twenty years of age, born in Ireland, of good physical development, a chambermaid in a hotel, one afternoon about a month ago entered my office, holding her handerchief to her face, and complaining that her jaw was out of place. The accident had occurred a few minutes before while attempting to bite an apple. She had never had a similar injury before. She said that she had experienced no pain, and only complained of the inconvenience due to inability to completely close her mouth. She had the characteristic deformity of the right side of the face. She had almost the normal range of motion in opening and closing the mouth; but the molar teeth of the lower jaw upon the right side could not be brought nearer than half an inch to the upper teeth, and there was the usual lateral deviation so that the lower row of teeth, on the right side, were on a vertical plane internal to the upper teeth.

As I had always succeeded in reducing dislocation of the condyles by following the classic method of pressing firmly upon the lower molar teeth with the thumbs, guarded by a towel, while an effort was made to elevate the chin with the remaining fingers of both hands, I essayed it in this case, expecting an easy victory. After several attempts, I failed utterly. I then tried to depress the molars with my thumb, while grasping the angle of the jaw, and attempting to rotate the condyle into place, but this also was unsuccessful. Nelaton's method by making pressure directly upon the coronoid process was equally ineffective. Two plans then remained: the ancient expedient of placing a wooden plug between the last molars and applying a bandage to the head so as to elevate the chin, and leaving the case in this condition for a time, hoping for reduction by muscular action. The other plan was to give an anesthetic, as advised by Gross, and even if found necessary, resorting to division of the same fibers of the temporal, masseter, and internal pterygoid muscles, in order to overcome the obstacle to reduction. I was just about making arrangements to send her into a hospital, but she pleaded so earnestly, that I was persuaded to make another attempt to reduce it, without administering ether. This time I tried a modification of Nelaton's method, which I can best illustrate upon the skull, in which I have produced a forward dislocation of the right side of the mandible. (Demonstration on skull). I seized the ramus and angle of the bone with my left hand, placing my thumb in front of the coronoid process. While pressing the bone downward and backward, I asked the patient to gently open and close her mouth several times. Then, at a time when the mouth was nearly closed, acting under impulse, I struck the left side of her chin a sudden, gentle blow, with the knuckles of my right half-closed hand. Instantly the return of the condyle to its place was announced by an audible "click" and accompanied by the most voluble expressions of thanks from the delighted patient. I confess that I was surprised at the result myself, and pleased with the simplicity of the manipulation.

The modus operandi, I think, may be explained in this way. By the gentle motions of opening and closing the mouth, the condyle was worked gradually backward toward the articular eminence. Then the sudden application of force took the muscles by surprise, and while they were so to speak, off their guard for an instant, the condyle with its articular cartilage slipped over the obstruction into the glenoid fossa, before the muscles had time to contract in response to the tap or jolt communicated to them through the bone.

Where the dislocation is confined to one side—a condition that is very rare in comparison with bilateral dislocation—this expedient seems well adapted to reduce the dislocation. In double dislocation, I have never failed with the classical method, which I learned at the Pennsylvania Hospital many years ago. It is possible that the above modification of Nelaton's method may be suited to some cases of double dislocation, particularly where there is comparatively little tearing of the capsule. In such a case the surgeon can have an assistant stand behind the patient and place his thumbs behind the angles of the jaw, so as to steady the bone and act as a fulcrum, while the tips of his fingers press upon the coronoid processes, making pressure downward and backward, while the patient moves the jaw. Then the surgeon confronting the patient can seize the opportune moment of striking a sudden blow upon the chin, so as to reduce one side at a time, or both condyles simultaneously, if possible.

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* Read before the Section on Laryngology and Otology, of the College of Physicians of Philadelphia, Dec. 17, 1902.

Note.—In the course of the discussion upon this communication, Dr. Geo. B. Wood, said that dislocation of the lower jaw had occurred in his experience, during operation for adenoids in a child. When he took out the mouth-gag, he noticed that the condyles were dislocated forward and the mouth could not be closed. As the child was still under the influence of ether he had no difficulty in effecting reduction by placing his thumbs on the molar teeth, in the usual method.

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## EYE AFFECTIONS COMPLICATING AND RESULTING FROM RHEUMATISM.*

BY RALPH OPDYKE, M.D.,
OF NEW YORK;
INSTRUCTOR IN DISEASES OF THE EYE, NEW YORK POST-GRADUATE HOSPITAL; ASSISTANT SURGEON TO MANHATTAN EYE AND EAR HOSPITAL.

IN order to simplify, as far as possible, the classification of eye affections following and depending upon rheumatism, it is well to have in mind its pathology to a certain extent.

It is quite unnecessary to recall the numerous theories advanced as to its cause, or to attempt to emphasize one more than another. The results are about the same, after all.

In its pathology we have certain factors always existing. The white fibrous connective tissue is generally the first to be affected, especially that which aids in controlling and regulating movement. Likewise also the serous tissues, those habitually engaged in facilitating free and active motion. There is a decidedly greater metabolism of the tissues than of the increased waste products. The excess of fibrin is really only an excess of tissue waste, and rheumatism produces just this kind of loss. Likewise the excess of the lactic acid is the result of increased metamorphosis of the non-nitrogenous, the excess of urea the result of increased metamorphosis of the nitrogenous elements of muscle.

Again, it is well to refer to the peculiar action of the rheumatic poison on the system. It strikes now here, now there; it recurs never, or any number of times. Unless pus plus fibrin occur, not much new tissue is formed. If fibrin alone, then scarcely no permanent change.

I realize that in the consideration of the close connection between rheumatism and certain so-called rheumatic eye affections, I am confronted with the far-differing statements of men like Jonathan Hutchinson, Fuller, Garrod, etc. Hutchinson, for instance, said, "I think it decidedly exceptional for rheumatism, simple and uncomplicated, to show any tendency to attack tissues of the eye."

Again, Fuller said, "In all the eye cases he had in which rheumatism was a complication, he believed that gonorrheal rheumatism, or gout, was the cause, and not rheumatism itself. Yet, above all, our most recent authorities now recognize the frequency and severity with which most any and all of the eye diseases seem at times so closely dependent on rheumatism as an etiological factor.

Beginning, then, with the external diseases of the eye. How many cases of the various forms of conjunctivitis do we see, in which local treatment seems to help but little? By questioning the patient, and learning of a present or past rheumatic history, we can often clear up the trouble by the administration of the salicylates. Oftentimes the conjunctivitis or blepharitis may be but the first sign of the oncoming attack. There is a peculiar irritation, called "Hot Eye," which comes on after eating indigestible food and overdrinking. Here there is a period of free lacrymation and conjunctival injection and a subsequent dimness of vision and inability to work. This condition seems, too, to carry out the rheumatic overmetabolism theory, and indicates that the eye is entirely in sympathy with the balance of the working body in the excess of the overproduction over the increased excretion of poisonous lithemic material.

Quite a paper might be written on the various tumors of the lids, as chalazia, or hordeola, etc., resulting from a rheumatic dyscrasia. Removing them is not enough. To prevent their recurring, the internal treatment of antirheumatics is in order. In severe attacks of acute articular rheumatism, it is far from rare to see an acute catarrhal conjunctivitis quickly appear with no local cause at all discernible, which will as rapidly disappear with the cessation of the joint attack. Closed tear ducts, in fact, any of the various forms of lacrymal disease may have as their exciting factor a rheumatoid diathesis. In studying lid conditions in those more or less prone to rheumatic affections, scarcely any relatively healthy lids are usually found. In these cases, there is often the so-called lithiasis conjunctiva. Here there is a calcareous degeneration of the secretion at the mouths of the Meibomian ducts. The many small yet white concretions are gritty to the touch and very troublesome, for they act as foreign bodies and cause pain and irritation. Therefore, as a result of the blood and fibroserous changes resulting from rheumatic poison, we may have any or all of the diseases the eyelids are liable to, and these same will depend in their character on the severity and duration of the original rheumatic attack and will be equally liable to recurrence.

It is the eye itself that is especially liable to the constitutional rheumatic diathesis. The cornea and sclera are often affected. Keratitis, whether phlyctenular or interstitial, is frequently rheumatic. So many of the chronic keratitis cases, not of specific origin, remain obstinate to the most careful local treatment, yet how quickly have we not seen them improve when the anti-rheumatic drugs were sufficiently pushed?

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We are all of us so apt, I fear, to make local treatment our sole care, especially in the crowded clinics, not giving the constitution and its frailties its fair share of attention. The scleral diseases, scleritis and episcleritis, are important, not only as regards their local manifestations and symptoms, but also, and more important still, are the frequency with which the adjacent tissues, as the iris and choroid, become secondarily affected. In the sclera the preponderance of fibrous tissue in the textures seems to be well adapted to the rheumatic poison and, here, too, occur frequent recurrences. In the diseases of the iris, we have certain characteristic symptoms which aid us in the rheumatic diagnosis. There is generally an antecedent rheumatoid history, or, again, there may be none, and the iritis may be the precursor of it. Again, one is affected at a time and later the other goes through the same manifestations.

The iritic pain in rheumatism is especially prone to radiate in a fan-shaped manner, and is paroxysmal in character, while the lacrymation is well marked. The exudative changes are always slight, unless there have been many preceding attacks. The posterior synechiæ are long and thin, and the unpigmented iris is particularly bright. There is generally not the keratitis complicating it as in the syphilitis iritis; on the anterior capsule too, there is but slight tendency toward the formation of pigment. Fortunately, choroidoretinitis is not often associated with rheumatic iritis. Though the liability of recurrence is so manifest in rheumatic iritis, still it is very fortunate that a favorable prognosis can usually be given as regards a return of good vision.

Again, we have a so-called Neuralgic Iritis in which there is acute pain radiating from branches of the fifth nerve. This pain is especially marked at nightfall, and is out of all proportion to the subjective symptoms of the disease. Another form is the Exposure Iritis. Here the mildly acute attack comes on while the patient is facing a sharp wind or in leaving a heated room, but the inflammation as quickly subsides, though prone to recur on every repetition of similar conditions. In all these rheumatic forms of iritis there is little lymph thrown out, and therefore there are few great structural changes.

The form called the Quiet Iritis is rather less frequent as a rheumatic complication, and although there is little pain, and even less ciliary congestion there is more markeed diminution of vision. A characteristic condition frequently seen in rheumatic iritis is for the papillary border of the iris to be fringed with a narrow band of grayish lymph, which is generally incomplete at its upper part of the circle, and roughly resembles a horseshoe in outline. Here, as in the other forms, there are frequent recurrences and sight is not affected. In short, when we find any of the above forms of iritis present and but one eye affected, we should be sure to seek for the rheumatic history, and treat it accordingly. Especially is this to be emphasized if this same iritis be a recurrent one.

Irido-cyclitis, of rheumatic origin generally appears in the eye corresponding to the side attacked. The other eye is later involved in like manner.

In choroiditis and in all the varied forms of retinitis, we can hardly with certainty lay great claims at the door of rheumatism as a cause direct or indirect. It is, perhaps, by an extension of inflammation from the adjacent sclera, when involved, that such argument could be religiously adhered to.

In glaucoma we must remember the various theories for its cause, now in vogue. (1) It is a disease of the iris, perhaps of rheumatic origin fundamentally, wherein the iris itself adheres to the periphery of the cornea, thus preventing the proper filtration at the angle of the anterior chamber and thereby causing a retention of fluid. (2) As Snellen suggests, a constitutional cause, wherein there is a great increase in secretion, but, more important still, a seemingly marked disturbance in the necessary excretion. (3) According to Stilling it is a hardening of the fibrous scleral coat surounding the papillæ, through which the waste material escapes. By any one of these three theories, therefore, we might justly claim that rheumatism plays a very important part, perhaps more than is at present credited to it. It certainly would be a blessing, if, by the persistent administration of the salicylates, we could ward off an insidious approaching glaucoma!

Referring to diseases of the crystalline lens, I fear it may be more difficult still to prove rheumatism an exciting factor. Like diseases of the vitreous, gout bears a more close and intimate relation.

Papillitis, with its innumerable list of etiological factors, has rheumatism frequently mentioned as an active cause. In such cases the neuritis would, of course, be molateral; and, likewise, the orbital form of neuritis. Here, strangely, this disease, unless it is due directly to one of the infectious exanthemata, has for its best authorized treatment the salicylates and mercuro-iodide combinations. Retrobulbar neuritis, or optic peripheral neuritis, as it really is, generally is recognized to be of rheumatic origin and responds to rheumatic treatment.

Finally, as to the eye muscles, the external rectus is the one most often affected in rheumatism, and the paralysis resulting is generally peripheral. This same external rectus, too, is the more frequently involved muscle of the whole eye group, from any cause. The muscle paralysis generally comes on shortly after exposure, or "catching cold," and especially in those prone to rheumatism. That of the one eye is involved at a time, and its response to the salicylates is splendid. I have seen cases of external rectus paralysis with the common resulting homonomous diplopia recover entirely and have a return of perfect binocular vision.

In conclusion, I have tried to show that there may be resultant from an attack of acute articular rheumatism, an inflammation of wellnigh any of the tissues in or about the eye, and that these same structures frequently show a peculiar susceptibility toward the rheumatic poison. Also, that these textures when involved, quickly respond to the recognized rheumatic remedies.

Both the general practitioner and the specialist are necessary in arriving at a correct diagnosis, and here this diagnosis is of the greatest importance. We want entire cooperation and union of action between them, in order that our afflicted patient may have the entire benefit of a cure from rheumatic diseases of the eye which, if properly recognized, could not only be cured, but would prevent other complications in themselves beyond our aid. And even after the diagnosis has been suitably arrived at and the proper constitutional remedy applied, the oculist must needs give long and faithful treatment and care in clearing up the local and temporary lesions produced previously by the general poison. It is in this way alone that the desired result can be accomplished and the eagerly sought for satisfaction, and even pleasure, both to our patients and to ourselves, be arrived at.

I shall feel gratified, therefore, if even though I may not have exploited a new theory or added anything novel or of great worth, yet have emphasized existing truths and conditions, and also led you to consider, perhaps, more carefully than before, the influence rheumatism plays in affections of the eye.

## MEDICAL PROGRESS.

### MEDICINE.

**Headache.**—Headache is such a frequent symptom of so many morbid states, both constitutional and local, that its presence should always lead to a thorough investigation in order that its cause may be definitely located. Many patients are made chronic invalids because the headache itself is treated and temporarily relieved while the ultimate cause remains as efficient as before. W. M. LESZYNSKY (Med. Rec., Jan. 3, 1903) in reviewing the various causes of this symptom says that we know almost nothing of the structures in which the pain of headache is felt, or the mechanism of its production. This symptom must not be confounded with true neuralgia in which the pain is paroxysmal in character and directly limited to the course of the nerve and its distribution. The idea that the location of the pain in any particular region of the head is always directly related to some underlying, adjacent or remote pathological process has not been substantiated by clinical experience. In a large majority of instances the headache is undoubtedly due to toxemia resulting from intestinal or gastric disturbances. Ocular defects and neurasthenia are two other very efficient factors. Among other causes which may be mentioned are rheumatism, gout, diabetes, alcoholism, lead, nasopharyngeal lesions, uterine and ovarian diseases, anemia, or hyperemia of the brain. A careful investigation of the entire organism is essential in every case, the most important element in the treatment of patients with headache being the recognition of the cause; as the pain is more often dependent upon some indulging constitutional condition than upon organic intracranial disease. Undoubtedly the unscientific and general use, by the laity, of coal-tar products and opiates for the relief of headache has resulted largely from the disinterested way in which members of the medical profession frequently treat this seemingly unimportant and familiar symptom.

**Pellagra.**—The opportunity has been afforded to A. PORRAS (Rev. de Med. y Cir. Prac., Jan. 28, 1903) of studying this condition under unusually favorable circumstances; and while he does not claim to add anything new to the knowledge of the disease, the very complete description he offers is of more than usual interest to the general medicine reader who has not access to the monographs to which the literature of this subject is chiefly limited. The author describes the affection as an essentially chronic diathetic disease, the manifestations of which are seen in the spring, when an erythematous redness appears upon the dorsum of the hands, and sometimes upon the neck and feet as well as any other part of the body which is exposed to the sun. This lasts for about twenty days and usually terminates in desquamation. Tumefaction, burning, smarting pain and itching accompany the erythema in its more severe forms, and it may even go on to the formation of vesicles and bullæ, which latter leave permanent scars. These patients are usually dyspeptic, highly nervous and irritable, and suffer much from insomnia. As the summer advances, the patient improves, as he does during the remainder of the year; till, at the approach of spring, the same train of symptoms appears with increasing severity in the successive recurrences; gastro-intestinal disturbances becoming more marked, the patient becoming melancholic, taciturn, utterly unable to sleep, and possibly developing suicidal tendency. Aphthous sores appear upon the tongue, inner surface of the cheek and fauces; the lips crack and peel so that they may be entirely denuded of epithelium, and tinnitus and vertigo are most distressing. Pain in the spine, extending to the lower extremities, is intense. Muscular control is lost so that in walking the patient lurches forward, and would fall if not supported. Paralysis or semiparalysis ensues, which becomes more marked as general weakness increases, and there may be involuntary emissions of urine and feces; the patient finally succumbing to the disease. The etiology of the affection is unknown; but most of these patients are alcoholics. But little can be done to ameliorate the condition; treatment being entirely symptomatic. Hygienic care and good feeding are, however, helpful prophylactic measures; as those whose systems are low, most readily fall victims to the disease.

**Postvariolic Osseous Complications.**—In the recent epidemic of smallpox at Lille, a certain number of cases developed osseous complications, such as are seen in typhoid and other infectious diseases. In the experience of VOITURIEZ (Jour. Sci. Méd. de Lille, Feb. 21, 1903) these affections may be divided into two classes: Variolic osteitis, which is manifestly dependent upon the virus of variola, develops slowly during convalescence and is characterized by localized enlargement of the bone and pain which is increased by pressure or motion. There is neither redness nor heat in the skin over the lesion. The diaphysis of the long bones is affected, and the condition is benign; resolution without suppuration being the rule. To the second class belongs what the author calls postvariolic osteomyelitis.

This is due to secondary infection—usually streptococcic—and affects the ends of the long bones; a purulent arthritis frequently resulting. The gravity of this condition varies. In some cases, a veritable pyemia develops; but in the majority, healing follows evacuation of the abscess, without elimination of sequestra.

**Gastrectasia Atonica.**—In a case of atonic gastrectasia, with intestinal peristaltic weakness, and with neurasthenic manifestations persisting for a year, and aggravated by an attack of violent emotion, G. Vassale (La Sem. Méd., March 4, 1903) employed the extract of the suprarenal bodies. He administered it in a daily dose of from 40 to 50 drops, and continued the treatment for two weeks, succeeding in this time in bringing about considerable improvement in the gastro-intestinal symptoms, and in the general condition of the patient. This fact is in agreement with those recently discovered, and based upon the fact that these glands contain a substance which maintains cardiovascular tone, and excites contraction of the smooth muscle fibers.

**Acute Hemorrhagic Nephritis from Potassium Chlorate.**—The susceptibility to potassium chlorate varies widely; in some cases eight to ten grams being taken with impunity, while relatively small doses will produce symptoms of intoxication in others. A Lorand (Jour. Med. de Bruxelles, March 5, 1903) reports the case of a man who after taking potassium chlorate in the form of pastilles 15 cgm. each before meals (eight being taken daily) for the relief of angina, developed an acute hemorrhagic nephritis. The author believes that the noxious influence of the drug was attributable to its ingestion in the fasting state, and in support of this idea, quotes Mering's statement that the effect of potassium chlorate is always more deleterious when taken upon an empty stomach. A diuretic water which the patient had taken, is also thought to have intensified the effect of the drug.

**Gangrenous Destruction of the Pituitary Body.**—To illustrate the influence which the integrity of the pituitary body exercises upon the integrity of the blood through the adrenal glands, E. Wasdin (Phil. Med. Jour., March 7, 1903) presents a clinical case with gangrenous destruction of the pituitary body following fracture of the sphenoid bone with subsequent infection. The patient was a healthy male of twenty-four years, who presented a fracture of the lower jaw, and after a time symptoms of extreme degeneration of the blood, hematogenous jaundice, purpura, changes in the red cells. Death came on 22 days after receiving the injury and previously the skin had become a deep bronze yellow, the right half of the face was greatly discolored and edematous, eye protruded between swollen lids. Autopsy showed a fracture of the body of the sphenoid with infection resulting in gangrene of the lobes of the pituitary body. There was also some gangrenous cerebral tissue at the base involving Gasserian ganglion, contents of sella turcica, and extending into the orbit. The character of the symptoms before death show the influence of this gland through the cervicosympathetic system over the secretion of the adrenals and of the value of the latter in the preservation of the integrity of the blood. The diagnosis had been a puzzle before autopsy was done.

**Function of the Ductless Glands.**—The importance of these organs to the vital functions and their relationship as such to disease and therapeutics has been the subject of an investigation extending over fourteen years by C. E. Sajous (Phil. Med. Jour., March 7, 1903). His conclusions are most ingenious and the questions involved embody some of the most intricate problems of physiology, among the foremost being the knowledge of the method by which the cellular elements out of which all tissues are built utilize oxygen. The paper is lengthy and detailed, the conclusions being as follows. When the venous blood reaches the pulmonary alveoli, the marked affinity of the adrenal secretion in the plasma for oxygen causes it to absorb this gas from the alveolar air. The carbonic dioxide in the blood is thus forcibly replaced by oxygen and expelled with corresponding vigor. The red corpuscle then bathe in an oxygen laden medium and their hemoglobin becomes converted into oxyhemoglobin. The physiological function of the internal secretion of the adrenals is to combine loosely with the atmospheric oxygen in the lungs and to endow the blood-plasma with its oxidizing properties. The oxidizing substance thus formed in the lungs the author has named adrenoxin. A study of the experimental physiology of the pituitary body and of the ultimate effects of sympathectomy and a rather extensive research into the pathogenesis of acromegaly and other pituitary disorders, having likewise pointed to phenomena directly ascribable to functional disturbance of the adrenals, it became clear that the governing center of the latter was situated in the anterior pituitary body which is directly connected with them by the cervicothoracic ganglia, the splanchnic nerves and the semilunar ganglia of the sympathetic system. A long line of research into the physiological action of some forty of the more important drugs and venoms developed the fact that the actions of all poisons, including toxalbumins and venoms is similar to the phenomena that ensue after the experimental removal of both adrenals or hemorrhage into these organs. The same observation was extended to disease toxins. It is probable, therefore, that all general symptoms witnessed in disorders in which the blood is invaded by a poison of any kind are, in reality, manifestations of overactivity, insufficiency or inactivity of the adrenals. The thyroid gland, the anterior pituitary body and the adrenals are functionally interdependent and constitute the "adrenal system" which has for its purpose to sustain physiological oxidation and the metabolic activity of all tissues. Considering the function of the leucocytes in these processes, he believes that the mitome of these cells is not made up of mere protoplasmic threads but of canaliculi for blood plasma and granules. From his studies he concludes that neutrophile leucocytes form peptones, which combine with "adrenoxin" to sustain general metabolism, *i.e.*, the vital process. Also myosinogen which combines with adrenoxin to supply contractile energy to muscles, and fibrinogen which combines to supply heat energy to the blood. Eosinophile leucocytes form hemoglobin which combines with adrenoxin to insure its storage in erythrocytes. Basophiles form myelin, the active principle of which, lecithin, combines with adrenoxin to develop nervous energy. The other internal secretion to which reference is made is that of the spleen and pancreas. The greater part of the trypsin of the organism is formed in the splenic vein by which it reaches the portal vein and continues in the blood-stream the process begun in the intestinal canal. The main function of this secretion is to protect the organism from the effects of bacteria, their toxins and all toxic albuminoids, including vegetable poisons and venoms. The posterior pituitary body may be regarded as the general center of the nervous system and the cocenter of the anterior body in sustaining the cellular metabolism of all organs. In discussing the ductless glands in disease and therapeutics he states that adrenal stimulants will often prove inadequate if the alkaline salts are not administered simultaneously, while the use of the salts without adrenal stimulation will prove of benefit for a time only. The power of the organism to antagonize the constitutional effect of pathogenic germs, their toxins and other poisons, is directly proportionate, everything else being equal, to the functional efficiency of the adrenal system. It follows, therefore, that when a favorable reaction does not follow the use of saline solution, it is because the adrenal system also requires direct stimulation, such as that afforded by strychnine, digitalis, etc., subcutaneously. These facts seem to be supported by clinical experience in various "toxine" diseases. The author awaits corroboration of these theories and will publish further contributions.

**Treatment of Tropical Dysentery with Sulphur.**—The value of sulphur in this disease, as observed in a series of cases under treatment at a natural spring on one of the islands of the Philippine group, is made the subject of an interesting report by T. H. WEISENBURG (Phil. Med. Jour., March 14, 1903). Three acute and fifteen chronic cases of amebic dysentery were treated. The acute cases were given one bath daily and plenty of the water to drink. In a month two were cured; the third, an alcoholic, had to be returned to medicinal treatment. The chronic cases were given two baths daily and the water to drink and all were cured in from three to six weeks. The springs contained water at 220° F. and 92° F., with a large percentage of sulphur. The dhobic itch also disappeared as a result of the baths.

**Silver Nitrate Injections in Tuberculosis.**—A collective investigation concerning the value of this method in the treatment of pulmonary consumption is reported on by T. J. MAYS (Phil. Med. Jour., March 14, 1903). Fifty-five cases are recorded, treated by twenty-one observers. The injections were given in the neck over the affected lung. The collective results seem to show that the injections possess a decided antagonism to the complex pathological processes known as pulmonary consumption. Cough was improved in 44 cases and ceased entirely in 6, the effect being probably due to a certain degree of stimulation produced by the injection in the neck on the vagus and its ramifications, promoting the tone and resistance of this nerve. Vomiting, when present, is relieved or abated. Night sweats were present in 42 cases; they were improved in 27 and ceased altogether in 14. The general strength is usually improved and the gain in weight is often rapid, all classes of cases, whether incipient or advanced, participating in the increase.

**Bacteriological Examination of the Blood in Scarlatina.**—Examinations of this character have been made durnig life in cases of scarlet fever with especial reference to streptococcus infection by L. HEKTOEN (Jour. Am. Med. Assoc., March 14, 1903). Many writers have demonstrated the presence of this infection in fatal cases, but comparatively little is known of the presence or absence of streptococci in the blood of non-fatal cases, mild or severe, complicated or uncomplicated. The author's observations were made with blood secured by puncture of some vein at the elbow after careful disinfection of the skin and inoculated in various media. One hundred cases were examined and the relatively larger number of streptococcal growths were obtained from the more severe cases. In these there also may develop local complications and clinical signs of general infection, such as joint inflammations, but even in the grave cases of this kind, spontaneous recovery may take place. The streptococci may also be found in the blood of cases that run a short, mild and uncomplicated clinical course (4 in 45). It was also seen that streptococcemia may not be demonstrable in fatal cases. The theory that scarlet fever is a streptococcus disease does not seem to receive any direct support from this investigation and the author believes the best hypothesis for the etiology of this disease is that two infections coexist. The primary infection has not been demonstrated and the secondary is the streptococcus infection which may be regarded as practically constant. The relation of one to the other still remains to be determined.

**Treatment of Progressive Paralysis and Psychoses.**—An interesting method of treating toxic and infectious psychoses with a specially devised saline infusion is advanced by J. DONATH (Deut. Med. Woch., No. 4, 1903). He employs an "artificial blood-salts solution," which contains in 1,000 gms. of distilled water, .25 gm. of potassium sulphate, 1 gm. of potassium chloride, 6.75 gm. of sodium chloride, .4 gm. of potassium carbonate, and 3.1 gm. of crystalline sodium phosphate. This is believed to be absolutely isotonic for the blood, and corresponds to the total ash of the blood omitting the calcium and magnesium which would be precipitated in such a solution. The blood corpuscles even if left in it for twenty-four hours are not affected. The fluid is injected through a Dieulafoy aspirator, 500 to 1,000 c.c. every three or four days under proper aseptic precautions. He employed it in six cases of progressive paralysis (type not stated). In one, the patient was enabled to return to his occupation of traveler, completely restored; four others showed marked and permanent improvement, and one was not affected. The method was also found of value in improving cases of cerebral syphilis, tetany and melancholia, the earlier the application the better the results.

**Malta Fever.**—The isolation by Bruce of the specific organism of Malta fever—*Micrococcus melitensis*—from the spleens of nine patients who had succumbed to that disease, placed the study of the affection upon a more definite working basis. The knowledge thus acquired has been of practical value, notably in the case described by TORRAS Y PASCUAL (Rev. d. Cien. Méd. d. Barcelona, No. 11, 1903). A case came under his observation in which, as there was a question of typhoid fever, Widal's test was used, with the result that agglutination was not obtained. Treatment of the patient's blood serum with a pure culture of the *Micrococcus melitensis* caused the appearance of the agglutination phenomenon in a few minutes; thus establishing the diagnosis of Malta fever. The diagnosis of this condition is said to be difficult in the early stages, but by the second week, a well-marked agglutination reaction may be obtained; this, with the characteristic temperature curve—35° to 40°, with daily oscillation of two to three degrees—and the general symptoms, including headache, diarrhea, gastric disturbance with perhaps bilious vomiting, serving to distinguish a case of Malta fever.

## SURGERY.

**The Surgery of the Biliary Passages.**—Probably no one has added so much that is new and of extraordinary value to this important part of abdominal surgery than A. W. MAYO ROBSON (Brit. Med. Jour., Jan. 24, 1903). So perfect has his technic become that he is able to reiterate what he stated in the preface in the first edition of his "Diseases of the Gall-Bladder and Bile Ducts," that except in the presence of infections or malignant disease, the mortality was only $1^1/_{10}$ per cent. Since writing this, his methods have changed somewhat, as well as his views on the subject of cholelithiasis. Once formed, gall-stones are insoluble so far as medicine goes, though much may be done by medical and general treatment for the relief of the catarrh which is always present and which indeed, may be indistinguishable from true gall-stone attacks. Medical treatment must therefore always be given a very generous trial. The operation is in the first place almost always simply exploratory, the actual operation being determined by the condition found. The surgeon, therefore, must needs be prepared to do any operation which he may be obliged to use. In the matter of preparing for operation, it is of the utmost importance that it shall be done in a hospital, because there the surgeon has much better control of the very important after-treatment. So far as instruments go, a gall-stone scoop is the only special appliance he employs. His sutures and ligatures are of formalin catgut prepared by the xylol process. Celluloid thread, which has recently been introduced, he finds preferable to silk, it being much stronger. It is of course non-absorbable and is consequently used only in effecting the serous suture in stitching the incision in the duct. He believes that except in this position no non-absorbable sutures should ever be used. Gloves are used by all assistants. Calcium chloride is given the patient if there should be chronic jaundice or tendency to hemorrhage, because he thinks that in all cholemic conditions the blood becomes so altered that its coagulability is seriously diminished. The doses should be heroic or the drug is valueless,—30 grains by the mouth before operation and afterward 60-grain doses by the rectum three times a day for several days. The patients are always enveloped in cotton wool. This is conveniently accomplished by making a suit of gamgee tissue, which is made for each individual patient at the cost of an hour's work. In operating, he now makes his incision over the middle of the right rectus parallel with its fibers. This is to be preferred to a vertical incision through the linear semi-linaris. If the gall-bladder is distended, a two or three inch incision suffices, but if it is necessary to explore the deeper ducts instead of carrying the incision downward, as he formerly did, he now proceeds upward to the interval between the ensiform cartilage and the right costal margin. This gives better view of the field. When the duct is incised, the bile usually flows freely. This is probably infective, but it is caught scrupulously on sponges. The stones are scooped out by the scoop and a probe is passed down into the bowel. If the gall-bladder is contracted and the pancreas shows evidence of chronic pancreatitis, he places a drainage tube directly into the duct, the tube being held by a catgut stitch which will hold for a week. Otherwise, if the size of the gall-bladder will permit it, he fixes a tube into the fundus of gall-bladder in the same way, thus avoiding pressure on the newly sutured opening in the duct. All manipulations of the duct should be avoided. By his present technic he is enabled to deal with the whole of the bile passages as if they were a straight tube close to the surface. This he considers a great improvement on his previous method of operating. The after-treatment is simple, but should be rigorously adhered to. His chief deductions are that we should operate before serious complications have ensued and that the operation should be thorough, expeditious and careful.

**Prevention of Postoperative Ventral Hernia.**—The many methods of accomplishing this result already suggested, and the many that are constantly appearing in the medical press prove that no one has yet solved, in the fullest sense, this difficult problem in surgery. J. Hahn (Z'blatt f. Chir., Jan. 24, 1903) lays the greatest possible stress upon the following points: (1) As distinctly a layer-suture as possible, consisting of first, peritoneum with the transversalis facia, then of the aponeurosis of the abdominal wall, with the exception of the muscles themselves. The muscles must be omitted for the reason that under tension of sutures the delicate fibers are cut through either at once or after a few days. The fibers of the aponeurosis, however, withstand tension without damage. Finally, the skin is sutured as a separate layer, and when there is a thick layer of fat beneath it it requires an extra layer for itself. His second step to secure healing of the wound is to employ absolutely sterile silk. It is possible to employ another thoroughly sterile and equally absorbable material, such as silkworm gut, which may be healed into the tissues as if it were part of them. He never employs catgut. His third consideration is to secure total retention of the sutures. It is for this purpose that he insists so strongly upon absolute asepsis.

**Treatment of Patellar Fracture.**—A modified form of the open method of treating this condition, with a report of 28 cases, is described by H. Barlocher (Correspbl. f. Schweiz. Aerzte, Feb. 15, 1903). All the patients were operated on the first or second day after the injury. The incision is made in the median line over the patella, the fragments, if necessary, freed from clots and soft tissues. The joint is cleaned out with *dry* (gauze) sponges. The capsular tear is then closed on each side of the patella by several strong silk sutures which approximate the two fragment. A row of silk sutures is then introduced which include the periosteum and the wall of the prepatellar bursa. The skin incision is closed with catgut sutures and drainage unless severe bruising were present is usually omitted. Immobilization was kept up for 4 weeks and then active movements in bed were immediately instituted, together with massage and faradization. In another week the patients were allowed to walk. The latter points for the chief contention of the author's method. In one case suppuration followed and a stiff knee resulted. The others all had useful legs without stiffness or interference,—in two cases ligamentous union took place, one being a second fracture. Bony union was demonstrated in the remainder by the X-ray.

**Cocaine and Adrenalin for Anesthesia of Inflamed Tissues.**—Recognizing that cocaine sometimes acts unfavorably on inflamed tissues, M. Bottier determined to try the effects of adrenalin associated with cocaine for securing anesthesia for general surgery. M. E. Fosey (La Sem. Méd., Feb. 24, 1903) applies the same principle to general surgery by employing injections of a solution of cocaine 0.5 per cent., modified by a few drops of a 1-per-cent. solution of adrenalin, usually in the proportion of 6 to 12 drops in every 4 to 20 c.c. of cocaine, and never exceeding 15 drops in 25 c.c. of the cocaine solution. He begins by infiltrating the skin along the line of his incision, thus proceeding along the walls of the abscess of the outlying region of the inflamed tissue. Very rapidly there appears a strong vasocontraction and at the same time pain disappears so far as concerns extirpation of the diseased tissue, but great pressure and strong traction, however, remain painful. Another advantage is that the blood-loss is made very little. He has now employed this method in a number of cases, without a single unfavorable result.

**A New Method of Treating Fractured Femur.**—The difficulties usually encountered in fracture of the femur are claimed to be overcome by J. P. L. Mummery (Lancet, Feb. 28, 1903) by the following splint. An extension stirrup is applied with strapping from ankle to knee in the usual way, and the stirrup is fixed around the footpiece of a McIntyre splint, the thigh-piece of which should be long enough to reach well up to the fold of the buttock. On the under side of the thigh-piece, and close to its middle margin, a metal hook is fixed. The best splint is the McIntyre, made so that the length of the footpiece may be adjusted by means of a thumbscrew, with a flat metal hook attached to the under side. An anterior splint for the thigh is then made of Gooche's rubber, or, better still, gutta percha, padded with a double layer of gauze, and fixed to the thigh with webbings passed round the splint. The fracture having been set, the splint is now adjusted, with the knee bent nearly to a right angle, and the limb is fixed with bandages or webbings, as the case may be. A leather strap, which should be about an inch in breadth, is now passed through the lugs on the carriage of a Salter's cradle, then around the thigh-piece of the splint, and caught in the hook of the under side. The buckle is then brought to one side and the strap is tightened until the buttock and thigh of that side are lifted off the bed. When the strap is sufficiently tight, it should be possible to pass the open hand beneath the buttock on the injured side. Another splint is then passed around the lower end of the splint, and fixed to the cradle to support the leg. This strap must not be too tight, or it will depress the upper end of the splint. The upper strap will need tightening to make up for the inevitable stretching. All that is necessary to examine the fracture is to remove the anterior thigh splint. By this method a very powerful extension may be easily secured, and, with a little attention, will remain efficient. The weight of the thigh and buttock draws the upper fragment away from the lower, which is prevented from moving by the extension strapping and stirrup around the foot-piece, and by the bent position of the limb. The chief advantages of this method are ease in nursing, less tendency to movement at the site of fracture, general comfort and simplicity, and, finally, that the flexed position of the leg upon the thigh aids in maintaining good apposition by releasing the strain upon the flexor muscles.

**Cardiac Tonics Before Operation.**—Recognizing that fear of the operation sometimes produces cardiac weakness and thereby influences the evil effects of prolonged anesthesia, L. Feilchenfeld (La Sem. Méd., Feb. 18, 1903) has been employing through several years tincture of strophanthus, in five- or six-drop doses, several times a day, for several days preceding intervention. Similar observations are made by other authorities, some of whom use strophanthus and digitalis in fifteen-drop doses, four times a day. Feilchenfeld has carried his observations farther, and concludes that the surgeon should always examine the heart repeatedly before operation, not only as to the condition of the valves, but also of the cardiac muscle. In robust subjects, this preliminary treatment with cardiac tonic might be useless, but, on the other hand, if there is a nervous irritability of the heart, it had best be overcome. Weakness of the heart muscle, murmurs, indistinctness of the apex beat, and a small, rapid pulse, are among the more common indications for stimulation. He has found that the good effects of this method are shown by the slowing of the pulse, decrease in the muscle symptoms, and improvement in sleep and appetite. He states that one should have a pulse of 80 before beginning narcosis. In addition to these cases, there are others in which there already exists an alteration of the cardiac muscle more or less distinct. These naturally require more energetic treatment along the same line.

**Surgery of Gall-bladder.**—It is estimated that at least ten per cent. of all people have gall-stones, but since only about five per cent. of these ever develop symptoms from the stones, the simple presence of such foreign bodies furnishes no indication for interference, and, furthermore, since the percentage of recoveries from gall-stone attacks is so great there is abundant reason for the conservatism which has always marked the treatment of such cases. W. J. Mayo (Med. Rec., Feb. 21, 1903) shows how important a factor infection is in causing gall-stones and especially in exciting subsequent attacks of colic and cholecystitis. It is true that the problem of interference is a much more difficult one to settle than that of the similar condition, appendicitis. The patient is along in years and often, by reason of degenerative changes or adipose tissue, is not a good subject for operation, and, again, death does not often come with the tragic suddenness which often characterizes appendicitis. The causes which convert latent calculi into active ones are infection and the mechanical interference with drainage from the gall-bladder. Both these causes are usually present, depending upon one another, for it is usually the germs which excite the inflammatory obstructive products or induce the contractions which engage the stones in the mouth of the cystic duct. The question for consideration is whether in view of the possibility, nay, probability, of further extension of the trouble, it is not wise to remove active gall-stones early. The results of such operations are remarkably good. In over 2,000 operations of this kind in the hands of six surgeons, there was not a single instance of reformation of gall-stones. Complications are due to changes in the wall of the gall-bladder or involvement of the bile-ducts, and the stones may then become only an incident in the process which they initiated. The difficulties in the way of operation during an acute attack are much increased. Infection of the liver ducts introduces an element of uncertainty in the prognosis, and to this cause the majority of deaths after operation may be traced. Every gall-bladder presenting active symptoms should be looked upon as an infected organ and be drained. Only in the latent cases is it safe to do the ideal cholecystotomy. Drainage is continued till the bile is normal, and as the fundus is permanently elevated, gravity drainage through the cystic duct is even better than in the normal state. If the walls of the gall-bladder are thickened, and especially if the cystic duct has been obstructed, the gall-bladder should be removed if possible. If the liver ducts are not entirely free from inflammation the cystic duct should not be tied, for drainage of bile from the liver ducts must be provided for. Kehr says that the hepatic ducts require drainage in at least thirty-seven per cent. of cases. In the management of such cases it is recommended that the mucous membrane of the bladder be removed, the peritoneal, and as much as possible of the muscular coats be left intact. This gives the temporary advantage of free drainage for the hepatic ducts and the permanent effects of cholecystectomy. The mucous membrane is readily removed from the region of the cystic duct, but is firmly adherent at the fundus. For this reason the fundus may be cut away, the edges being stitched to the abdominal wall.

**Postoperative Acute Yellow Atrophy of the Liver.**—This is a peculiar sequela of operations, and several cases of it are reported by M. Ballin (Ann. of Surg., March, 1903), who states that, as to the treatment, prophylaxis is of primary importance. The prolonged use of chloroform should be avoided, especially where alcoholism or other chronic ailment has probably caused catarrh of the liver ducts. It should be avoided especially in the presence of inflammations of the viscera. Narcosis may be begun with chloroform, and later ether substituted. One must consider this serious liver infection, at least as partially a consequence of chloroform, for Eisendrath states that chloroform narcosis should never be continued for over one hour, because of its degenerative effect upon the heart, liver and kidneys. If the case be one of malignant jaundice, the prognosis is necessarily unfavorable; recovery is the exception. He reports one case, which was not fatal, probably due to venesection and saline infusion. Malignant jaundice is the consequence of destructive disease of the liver, just as uremia is of degeneration in the kidneys. He was led to try this method of treatment through success had with it in cases of eclampsia.

**Blank Cartridge Wound Infected with Tetanus. Excision. Recovery.**—The frequency and fatality of tetanus originating in blank cartridge wounds, especially in children, makes the following case, reported by J. B. Bain (Ann. of Surg., March, 1903), of general importance. A thirteen-year-old girl was shot in the palm of the right hand with a blank cartridge. Immediately after the injury the wound was washed out with warm water at home and the patient was sent to the hospital, where it was cleaned again with soap and water, chlorinated soda 1-15, and corrosive sublimate 1-1,500, and about 55 minutes after the injury the following operation was done: A tourniquet was applied to the forearm and an elliptical incision was made about the wound of such extent as to include the powder-stained area, with a surrounding area of normal tissue. The powder grains were imbedded in tissue, muscles and nerve sheaths. All such tissue was carefully removed by carrying the dissection down to the interval between the third and fourth metacarpal bones, as far as the fourth dorsal interosseous muscle. The wound was then washed with corrosive sublimate and a wick inserted and its edges partially approximated with sutures. Drainage was continued twenty-four hours and then removed. With the usual antiseptic treatment the wound healed in a month, and nearly three months later the patient remained well. Tetanus bacilli were found in the tissue removed. The success of this method of treatment renders note of it important.

**Knife Blade Removed from Lung.**—One is sufficiently familiar with bullets in the chest cavity, but not with knife blades, especially such as belong to the common jack-knife class. J. F. Baldwin (Ann. of Surg., March, 1903) reports a case of this character. The patient was a deputy sheriff, and had been stabbed by a prisoner with an ordinary cheap jack-knife. The blade broke off in the lung. The wound of entrance was just below the axilla, and was inflicted three months before he first saw the patient. At this time he was in a condition similar to that of advanced consumption, with signs of consolidation about the wound and a copious purulent discharge. He showed the ordinary signs of infection. Three radiographs, showing anterior, posterior and lateral views, located the knife-blade, which was removed without much difficulty after resecting one inch of an overlapping rib.

**Primary Retroperitoneal Solid Tumors.**—A differential diagnosis of these conditions concerns, according to R. Douglas (Ann. of Surg., March, 1903), innocent growths and malignant growths. The former are recognized by their long duration and comparative absence of symptoms. The fatty tumors are especially distinguished by their mobility more than elasticity and fluctuation. The malignant tumors have rapid growth, produce complications, as ascites and edema, and quickly entail cachexia. Tumors of the solid viscera, spleen, kidneys and liver may be mistaken for these growths, yet the functional and constitutional disturbances and carefully applied physical tests may make the diagnosis. The prognosis, depends, of course, upon the seat and form of the tumor. Contraindications to operation are pronounced cachexia, metatarsis, manifest universal attachments which may interdict even exploratory incision. Sometimes, after the abdomen has been opened, the relation of the tumor within the abdomen will be found to be such as to prevent further work.

**Excision of the Superior Maxilla under Medullary Narcosis.**—A second instance in which this operation was done under this form of anesthesia is reported by A. W. Morton (Am. Med., March 21, 1903). The patient presented a carcinoma of the right jaw. A half grain of cocaine hydrochlorate was introduced by the usual method into the subarachnoid space between the third and fourth lumbar vertebræ. Analgesia was complete in 20 minutes, the pulse varied from 90 to 100, respiration was normal, and no unpleasant effects were observed. The entire superior maxilla and the soft palate was removed, the hemorrhage being readily controlled by pressure and the Paquelin cautery, and no blood was swallowed or inspired. The author claims many advantages, especially in operations about the buccal cavity. The anesthetizer is not in the way of the operator. Suffocation and later pulmonary complications from the inspiration of blood and secretions are avoided. It can be used in acute diseases of the heart, lungs, or in kidney complications. The shock of the operation is diminished and severe after-effects are absent. He has used this method in 929 cases, 76 of which were operations above the diaphragm and the analgesia was as complete as in the lower extremities. He is convinced that its greatest field of usefulness is for operations in such localities where there is danger of blood and secretions entering the lungs.

**Operative Treatment of Goiter.**—A series of 12 successful cases operated on by the method of Kocher is reported by I. Olmsted (Phil. Med. Jour., March 21, 1903). The original method is followed, differing only in the matter of drainage and suture. The operation is done under cocaine, and the important points are the absolute asepticism, careful ligation, avoiding the wounding of the gland, and the preservation of the recurrent laryngeal nerve. Of the 12 cases, 11 were simple, and one exophthalmic goiter. Drainage was only used in four cases and then abandoned. Subcuticular silver wire suture is preferred, and should be removed on the fifth day, together with the first dressing which consists of silver foil and gauze. The second dressing is of gauze and collodion. One case of Grave's disease was operated on and three others which presented symptoms, all improved and symptoms disappeared.

**Congenital Unilateral Renal Defects.**—The greatest importance in the diagnosis of these conditions is attached to catheterism of the ureters by G. J. Winter (Arch. f. klin. Chir., V. 69, H. 3), because by this means one is enabled to collect fresh urine from each kidney, after which each specimen may be examined and a comparison made as to the physiological conditions of the organs. It is therefore necessary to take the greatest possible care in this examination to determine the functional activity of the kidneys. Since the diagnosis of unilateral kidney disease is possible, no effort should be spared to make it. So far as the treatment of the diseases of a solitary kidney are concerned, he states that calculus, hyponephritis, paranephritis, suppurative nephritis, and suppurative paranephritis and perinephritis are to be treated only by surgical measures.

**Intravenous Injection of Collargol.**—The employment of this drug in a case of septic parametritis is made the subject of a report by Jaenicke (Deut. med. Woch., No. 6, 1903). The dose was 8 c.c. of a one-per-cent. solution of Credé's collargol injected into the vein at the elbow. The temperature became normal in 36 hours and was only increased by the development of a venous thrombosis in the left leg, which disappeared spontaneously in a few days. A tumor as large as a child's head produced by the exudate subsided in 4½ days. The arm which had been injected was painful and helpless for a few days.

**Anatomical Obstacles to the Reduction of Old Dislocations of the Shoulder.**—The following dictum concerning old, irreducible dislocations of the shoulder is offered by G. Dollinger (Deut. Zeitschr. f. Chir., H. 66, B. 3 and 4, 1903). Rather than the usual obstacles to an easy return of the head to the cavity, namely, masses of callus, osteophytes and the like, he has found the difficulty to lie in the retraction of the subscapular muscle. In seven cases he has found the following operation to correct the difficulty. An assistant fixes the arm with the elbow at right angles and slightly lifted to the front, so that the front part of the deltoid and the coracobrachialis and biceps muscles are relaxed. The skin incision begins at the clavicle, and passes downward parallel with the cephalic vein, a small fraction of an inch to the inner side of it, and terminates at the insertion of the pectoralis major muscle. He now passes by blunt dissection with the finger or a periosteum elevator into the interval between the pectoralis major and the deltoid and reaches the corachoid process. The border of the deltoid, with the vein just mentioned, are drawn outward. Blunt dissection is then carried more deeply, until he has put the coracobrachialis muscle and short head of the biceps to the outer side, the pectoralis minor to the upper side and the pectoralis major to the inner side. In the bottom of this wound is seen the head of the bone, particularly the canal in which the long head of the biceps passes. In the cases on whom he operated, he found this tendon regularly turned out of its path. He found that rotation outward was successful only until the lower tuberosity presented in the wound, upon which was strongly stretched the tendon of the subscapularis muscle. Upon dividing this, he found that reduction was easy.

**Cystitis and Tumors of the Bladder in Bilharzia.**—The following conclusions as to the results of this rare disease of the bladder are offered by C. GOEBEL (Deut. Zeitschr. f. Chir., B. 66, H. 3 and 4. (1) In severe forms of bilharzia cystitis, suprapubic cystotomy and curetting of the bladder is a palliative means of treatment which frees the patient of his painful symptoms and makes him capable of following his vocation again; (2) in tumors due to bilharzia, suprapubic cystotomy is definitely indicated, because without further treatment it relieves the high degree of pain to which the patient is subject, and leaves a fistula which, although a disadvantage, is certainly a gain when compared with the previous dilemma of the patient. This author places himself against two suggestions as to treatment. Of these, the first is the creation of Witzel's oblique fistula, for the reason that as a rule the walls of the bladder are so diseased as to be too friable to permit of the formation of such. In the second place, the use of the cystoscope in these cases for diagnosis is contraindicated. An examination of the urine, together with very careful use of the sound, is sufficient to make an accurate diagnosis.

**Suture of Arteries.**—Surgeons have finally ventured to perform suture-operations upon the larger blood-vessels. H. SCHMITZ (Deut. Zeitschr. f. Chir., 1903, B. 66, H. 3 and 4) offers the following conclusions concerning the various processes of repairing damage to arteries, namely, the use of buttons, of continuous sutures of silk and catgut, of retention sutures, and of similar methods. In a few important points, attempts made at suture of arteries in man have agreed with numerous experiments made upon animals. These points are the following: (1) Aseptic wound is absolutely essential; (2) smooth, clean margins of the wound, which may be separated readily, without very much tension; (3) the vessels to be sutured should not be too small. In man the popliteal artery and the brachial artery are examples of vessels of suitable size; (4) the arteries should be carefully exposed, and not over too extensive an area; (5) under these conditions ordinary suture may succeed, either in longitudinal, transverse or flap wounds, without much laceration of the vessel, and also oblique wounds. Any wound must not involve more than half the circumference of the vessel. There is less unity of opinion as to the best material for the suture, but there is agreement that the needle and its thread may be as fine as possible. Sutures with catgut have not been very successful, and kangaroo tendon has similarly failed, because both are too coarse, and cause encroachment upon the lumen and secondary thrombosis. This happened in animals, but in man four such operations have succeeded. In animals the greatest success has been had with silk. Other objections to catgut are that it is not of so uniform a diameter as silk, and cannot be so accurately and securely tied into knots, and is furthermore very much more difficult of sterilization.

## OBSTETRICS AND GYNECOLOGY.

**Elephantiasis Congenita Cystica.**—Antenatal pathology presents no monster which, while preserving some semblance to human form, deviates therefrom in stranger and more striking manner than the condition above mentioned, remarks J. B. HELLIER (Brit. Jour. of Obstet., Feb., 1903). The malformation depends upon three conditions: (1) Certain defect of the skeleton. These, however, are not the essential thing. It is not, as in spina bifida, where the osseous defect causes the meningomyelocele. The distorted contours depend upon disease of the soft parts; (2) the general anasarca of the body; (3) the characteristic lesions consist of the formation of extensive irregular cystic cavities in the subcutaneous tissue. After reporting in detail two such cases, the author summarizes as follows: The first monster may be described as an acardiac fetus—a parasitic twin. It was affected with hydrocephalus and cystic elephantiasis and general dropsy. It had developmental defects in anterior thoracic wall and in extremities, with great defects in internal organs; heart, lungs, liver and spleen being absent; kidneys rudimentary, and alimentary canal imperfectly developed. The second had also cystic elephantiasis, absent upper extremities and rudimentary development of face and skull. History wanting.

**Fundal Fibroid Polyp and Inversion of the Uterus.**—A most interesting case of this variety is reported by H. BRIGGS (Brit. Jour. of Obstet. and Gyn., Feb., 1903). Mrs. P., widow, sixty-three years of age, physically a robust woman; first consulted her physician in the earlier part of Jan., 1902, because of her greatly reduced weight, continual hemorrhage and occasional pains. For two years she had been aware of a lump protruding from her vagina, also of a fetid discharge. For twenty years there had been hemorrhage, and once, seven years ago, the hemorrhage had been severe. On examination, Feb. 27, 1902, the uterus was found to be completely inverted, and in numerous small patches softly adherent to the walls of the vagina. The polyp, partially protruding at the vulva, resembled in shape a small door knob; it was centrally attached by a short pedicle to the inverted uterine fundus. The boss of the polyp measured two inches and the pedicle three-quarter inch in diameter, the former presented an irregular, sloughy surface. The patient had had twelve children and two miscarriages, and had not consulted a doctor during the twenty years of hemorrhage. The progress and duration of the inversion were unknown. On March 4, 1902, the uterus was removed. The only hemorrhage worthy of note, and that was moderately free, occurred during the handling of the inverted uterus and polyp. Within the inverted cup of the uterus only the innermost portions of the broad ligament remained. The other organs, which were normal, and above the operation wound, were left.

**Post-Mortem Parturition.**—A number of cases have been collected by L. HIRIGOYEN (Jour. de Méd. de Bordeaux, Feb. 22, 1903) from the literature of this subject, in which the birth of a child occurred after the death of the mother; in some instances, as much as two or three days having elapsed. Various explanations of the phenomenon have been offered, of which the author quotes that of Bichat, that all the organs do not die simultaneously; and that uterine contractions may take place after the heart has ceased to beat. Leroux has noted uterine contractions a quarter of an hour after the cessation of respiration. Brown-Sequard believes posthumous contractility to be due to contact of non-oxygenated blood with the muscular fibers. It has been observed that post-mortem births occur only in those eight or nine months pregnant; the parts being then sufficiently prepared for parturition to render posthumous contractions effectual. In cases of births some time after the mother's death, the consensus of opinion seems to be that they are attributable to compression from the gases engendered by cadaveric putrefaction.

**The Relation between Uterine and Gastric Diseases.**—In pursuing investigations whose aim has been the discovery of the reflex centers and pathways of the nerve plexuses of the female genitals, Tuszkai Odön (Am. Jour. of Obstet., March, 1903), has had his attention directed to the close anatomical connection between the nerve paths of the uterus and the stomach. Cases treated for gastritis and neurosis of the stomach showed no improvement, and on genital examination, showed deviation of the uterus in either the sagittal or horizontal direction or chronic inflammation of the organ. The cure of these uterine troubles was followed by a striking improvement or an entire cure of, the gastric symptoms. The writer summarizes his studies as follows: (1) Uterine and gastric troubles may be in close reciprocal relation; (2) in making a diagnosis of reciprocal action, merely coincident affections of these organs must be excluded; (3) the first medium of reciprocal action is the nerve path, the center of which for the genital must be sought, not in the brain or spinal cord, but in the sympathetic system. The ventral center of this is the solar ganglion, by means of which the uterus, through the inferior hypergastric plexus, is brought into reflex association with the anterior and posterior gastric plexuses. The reflex paths are called spermatic, pseudohemorrhoidal, cutanocavernous, uteroceliac, and uterospinal anastomosis. The more direct reflex paths are direct connections of the vagus with the sympathetic system, without entering the solar plexuses, especially with the uterovaginal plexuses and with the para-uterine ganglia, which are connected with this (genitocrural anastomosis). (4) The other mode of origin of reciprocal action must be sought in changes in the common statical relations of both organs. (5) Dislocations of the stomach cause uterine displacement through reciprocal action of the statical mechanical forces (secondary uterine trouble), whereas primary displacements of the uterus produce secondary genitoneurosis or actual disease, the reciprocal action of these cases being brought about through nerve reflexes. (6) The blood path plays a rôle of only tertiary rank in regard to this reciprocal action.

**Celiotomy during Pregnancy.**—When formerly a surgeon made a mistake in his diagnosis on opening the abdomen and found pregnancy, he quickly closed it and let the case alone, even if some growth or some pathological condition existed, says J. M. Carstens (Am. Jour. of Obstet., March, 1903). To-day we know that operations can be just as safely done as if no pregnancy existed. Tumors are removed that will interfere with delivery, and other acute conditions, such as appendicitis or injury to the bowels, in spite of existing pregnancy, are operated upon most promptly. The author has operated in the case of existing pregnancy twenty-one times with five deaths, so that the mortality was over 23 per cent. The writer believes that the mortality is less in the more modern cases. These twenty-one cases were as follows: Appendectomies, 5; fibroids, 4; hernia, 1; abdominal hysterectomy, 1; ovariotomy, 3; vaginal hysterectomy, 3; miscellaneous, 4. Tumors above the brim of the pelvis, or which can be moved above the brim of the pelvis, need not be interfered with; still, all tumors take on rapid growth during pregnancy, and the increase in size may interfere with the functions of life and then require surgical interference.

**The Treatment of Placenta Previa.**—The management of placenta previa is a very serious business. In obstetrical practice nothing is more so, not excepting that of puerperal convulsions, which are now well understood in their pathology and treatment. Very properly may it be said, remarks C. D. Palmer (Am. Jour. of Obstet., March, 1903), that there is no fixed treatment applicable to all cases of placenta previa, at all times and under all circumstances. Treatment needs to be prompt and well directed, actuated, of course, by intelligence, skill and courage. There is no safety to the mother until the delivery has been completed, by means artificial or natural; complete safety is not assured even after the event has taken place. Two chief dangers to the mother are loss of blood and sepsis. To the child the risks are greater. When the attack comes on the patient should be put in the recumbent position, as hemorrhage may be provoked by bodily exercise, coughing, lifting, or sexual intercourse. If labor pains have begun, the firm application of a clean abdominal bandage will stimulate further these contractions and aid to press the presenting portion of the fetus more thoroughly against the dilating cervical canal and lower segment of the now bleeding uterine wall. The vaginal tampon need not be employed, unless the hemorrhage continues or repeats itself, provided always the physician's services are near at hand. Abnormal presentations are relatively more common in cases of placenta previa, because then labor is so often premature, or because the present placenta mechanically displaces what otherwise would be a normal presentation. The author has little confidence in the use of rubber dilators (Barnes' or Charpentier's) either to induce labor or to dilate the cervical canal, but rather depends upon the larger metal dilator and the tampon or the fingers. It is rare that conditions are such as to justify Cesarean section in a case of placenta previa. Any complete separation of the placenta—Simpson's method —will arrest the hemorrhage. This method usually ignores the life of the child. Certainly then, it ought, for the most part, be used only when the child is dead or is not viable, or when greater exhaustion of the mother contraindicates delivery by version. Ergot has a limited use in this disease, more for the purpose of stimulating contractions after dilation has occurred, never before, if version is reasonably entertained; but it should always be given postpartum in this disease, and the recumbent posture should be prolonged for several days longer than in a normal case. Sepsis is to be avoided by care in the handling of the parts that they may not be bruised or torn, and, above all, observe the strictest aseptic and antiseptic precautions. Undue loss of blood invariably augments the susceptibility to, and liability of dangers of, septic absorption.

**Rupture of the Uterus during Labor.**—This accident is not as rare as is generally believed. The statistics given in text-books are unreliable. In 4,420 consecutive labor cases, in the service of the Chicago Lying-in-Hospital Dispensary, there have only been two deaths and these were due to rupture of the uterus during labor. Joseph B. De Lee (Am. Jour. of Obstet., March, 1903) has only seen nine cases of rupture of the uterus sub partu, and one other occurred in his service during his absence. In considering ruptures of the uterus a sharp line must be drawn between complete and incomplete, the latter being tears that extend to, but not through the peritoneum. The prognosis in incomplete tears is quite good, most of the women recovering; while with complete rupture the majority of the patients die, whatever be the mode of treatment. The most successful method of treatment with incomplete rupture is the tamponade of the rent. Gauze is lightly packed into the cavity under the peritoneum, taking extreme care not to injure this delicate covering. If hemorrhage is profuse the gauze packing will probably not stop it, even if strong counter pressure from the abdomen is made. It is usually impossible to control the hemorrhage from below, and in these cases the abdomen must be opened and the broad ligament and the vessels clamped from above. In the treatment of complete ruptures there are six methods to choose from, viz., (1) Delivery of the child from below, and expectancy, ice-bag on the abdomen, ergot, opium—*i.e.*, symptomatic treatment; (2) delivery of the child from below, tamponade of the rent and the uterus; then same as No. 1. (3) Delivery of the child from below, sewing up of the rent as far as possible, and tamponade of the remainder. (4) Vaginal delivery, followed by extirpation of the uterus from below. (5) Laparotomy, removal of the child and placenta, suture of the uterus. (6) Laparotomy; removal of the child, etc., partial or complete extirpation of the uterus. The first four methods presuppose the possibility of delivery of the child from below. This is not always possible, or it may be inadvisable because of the possibility of the danger of enlarging the uterine lacerations. In hemorrhage that cannot be controlled from below, and in contracted pelves, the laparotomy may become a necessity. If there be any question of sepsis the whole uterus should be removed, the peritoneum closed, and the subperitoneal space drained from below. It is a question if the peritoneal cavity should be drained. Of the four methods of treatment in which the child is delivered from below, that offering the best results is the partial drain and suturing of the peritoneal cavity and the site of the rupture. Even in septic cases simple drainage offers much hope, but here the vaginal extirpation is coming into vogue, and when the hemorrhage is slight the latter operation may be practised.

**Conservative Surgery of the Tubes and Ovaries.**—In a long, searching and critical review of the various theories on this subject, and the best advocated operations to be employed in operating, FLORENCE N. BOYD (Brit. Jour. of Obstet., March, 1903) finds that the consensus of opinion from the indications given by the operators of the widest experience, that conservative operations on the tube and ovaries may be practised: (1) For new growths of benign character, for myoma and fibroma of the tube, simple cysts, dermoids and fibroids of the ovary and parovarian cysts; (2) the tube and ovary ought not to be sacrificed as a matter of convenience to the operator). It is contraindicated in malignant or in papillary disease; (3) for chronic oophoritis and cystic degeneration; (4) for hematoma of the ovary and tube (perhaps hardly a consensus of opinion here); (5) for inflammatory diseases of the appendages, where the acute stage has subsided, provided that there is no suppuration in the pelvis or in the ovary, that the contents of the tube are serous or hemorrhagic, and prove sterile on immediate coverslip bacteriological examination (Schauta, Wertheim), and that the inner end of the tube is patent. For conservation to be rational it is essential that part of the ovary should be capable of function; if both ovaries have to be entirely removed, there is no reason for retaining the tubes; the state of the ovaries must govern the method of procedure; (6) conservative operations on the tubes should be limited to the child-bearing period. Up to the present it is uncertain whether an ovary, the seat of a small cystoma, may be safely resected or whether a tube, dilated by old sterile pus can be safely opened up. Some of the American surgeons show special boldness in the presence of pus. With regard to the tubes, the majority of conservative operations are undertaken when the abdomen has been opened for gross disease of the appendages upon one side; and less advanced tubal disease has been revealed. In considering the method to be adopted in dealing with the tubes, certain points stand out: the artificial ostium should be wide enough to allow of later contraction, if necessary, by slitting the tube longitudinally. Provision should be made for eversion of the mucosa in order to obtain as far as possible the conditions present in the normal ostium abdominale. Care should be taken, by suture or otherwise, to leave the new opening in the tube in juxtaposition with the ovary. The energetic disinfection of the tubes by antiseptics practised earlier, is unnecessary if the cases are suitably chosen, and all measures likely to irritate the peritoneum are to be avoided. It is still undecided whether resection or igni puncture of the ovary is the best operation for chronic oophoritis and cystic disease. That resection may be followed by adhesion in some cases has been proven by observation. We are not yet in a position to determine how far the technic adopted (*i.e.*, the kind of suture used and the method suture) is responsible for such adhesions.

**The Nature of Hydrosalpinx.**—In a résumé of the clinical aspects of twenty cases of this variety the following ideas are advanced by CLEMENT WHITE (Brit. Jour. of Obstet., March, 1903): In nine instances the old view that hydrosalpinx is a stage of salpingitis cannot be disproved, for the condition followed extra-uterine pregnancy of gonorrhea. In eight of these the balance of evidence was in favor of the closure of the ostium of a healthy tube by the peritoneum in the way suggested by Dr. Cullingworth. Ten of the cases were in the writer's opinion, a retention cyst, a tumor sui generis, independent of neighboring organs and due to faulty development. In one case the condition seemed to be due to peritonitic closure of the tube following extra-uterine gestation. Uncomplicated cases of hydrosalpinx are rare. Some definitely are symptomless until some accident intervene, such as sudden enlargement of the tumors, or pelvic peritonitis, or growth of another tumor. Pain in the hypergastrium and vagina are by far the most prominent symptoms. There is some pain at the end of menstruation. Dyspareunia and dyschezia are fairly common, as is congestive dysmenorrhea. Menorrhagia is exceptional, irregularity of menstruation is exceptional. Menstruation is scanty in cases of hydrosalpinx; in fact, in one case, where there were frequent attacks of pelvic inflammation, is almost the only marked exception to this rule. This single point would make one chary of accepting the view that hydrosalpinx is merely a stage of salpingitis. Irregular and excessive menstruation is one of the most common and constant symptoms of salpingitis. That hydrosalpinx is a retention cyst, most authors agree. That some cases are little more than a catarrhal salpingitis with an excessive amount of fluid retained, the author is disposed to admit. That some are due to an edematous condition in the final stages of kidney disease is also probable. That some are due to peritonitic closure of a healthy tube seems also to be true. But many of the cases where the ostium is such as is commonly described as due to salpingitic closure of the tube, are cases of impervious ostia due to faulty development. It is in this class of case that Mr. Bland-Sutton has pointed out that a small pedunculated cyst is often present, whether due to a hydatid of Morgagni, or Kobelt's tube he does not know. At least the author would insist that the clinical history in too large a proportion of his cases to be negligible is not the history of a salpingitis, is often marked by an absence of symptoms, and the symptoms which are present are such as are found in cases of mal-development, namely, sterility, pain, scanty menses, dysmenorrhea, dyspareunia.

**Deciduoma Malignum after Menopause.**—In the light of the interest that this subject is giving obstetricians and gynecologists, a most unique case is added to the literature by Fred J. MacCann (Brit. Jour. of Obstet., March, 1903). A woman aged fifty-three years was admitted to the Samaritan Hospital on March 21, 1902. She had had ten children. Her last pregnancy, nine years previously, terminated at the third month. Eighteen months before her admission to the hospital she had ceased to menstruate and no blood had been noticed until October, 1901, when a sudden gush of blood came from the vagina, followed by a continuance of the flow for a day. The free hemorrhage continued every four or five days until three weeks before her admission, when only a brown discharge was noticed. The severity of the hemorrhage necessitated her confinement to bed during its progress. There was no pelvic pain, but there had been loss of weight. Manual examination of the uterus showed it to be enlarged, about the size of a three months' pregnancy. A small fleshy polyp was growing from the external os uteri. Slight uterine hemorrhage followed the examination. March 26, 1902, vaginal hysterectomy was performed. The patient rallied from the operation but died six days later from suppression of urine. The urine contained two-thirds albumin. Post-mortem examination and the microscopical examination of the uterus and the adnexa showed the tumor to be a deciduoma without involvement of the ovaries or tubes, there were no metastases.

**A Case of Vascular Mole.**—An interesting case of this variety is reported by Mary Scharlieb (Brit. Jour. of Obstet., March, 1903). After giving the clinical history of the case the author finds that the most interesting points were: (1) The difficulty of diagnosis due to the great and persistent hardness of the uterus; (2) the association of bilateral cystoma with the pregnancy; (3) the reminder given of the possible association of vesicular mole with subsequent malignant disease of the placental site; (4) but unfortunately nothing definitely was proven by the case as the uterus was removed soon after parturition.

**A Coccygeal Tumor which Interfered with Labor.**—Congenital tumors of the coccygeal region are of special interest because of their comparative rarity, their enormous variety of structure, and their doubtful source of origin. In view of these facts, Jno. T. Hewetson (Brit. Jour. of Obstet., March, 1903) reports a case of coccygeal tumor which gave difficulty during labor and discusses the various varieties of tumors that are to be found in this region. The so-called carcinomata and cystic sarcomata are terms given to tumors which are histologically benign, and manifest clinically no malignant characters whatever. Congenital tumors of this region may, broadly speaking, be divided into two classes—cystic and solid. Of the cystic group the following are representatives: Spina bifida dermoids, including sequestration dermoids and thyrodermoids, or congenital adenomata, simple cysts unconnected with spinal canal, hygromata and the so-called hydatid cysts. In the solid group may be placed superfetation, lipomata, myxomata, fibromata, of the dura mater, true sarcomata and hernia. The variety which the author reports is of the adenomatous order. The interior of its capsule was continuous with the spinal canal. The seat of origin of adenomatous tumors has been the subject of considerable speculation and enterprise. The neurenteric canal, the coccygeal gland, and the sebaceous and sweat glands of the skin are the chief sources of origin to which these complex tumors have been attributed. On November 10, 1901, the author was asked to see a case of a woman, aged thirty years, in her third labor. The first two had been normal, the last was nine years ago. In the latter months of the present pregnancy the abdomen had been unusually large, and there had been a white tense swelling of the legs. Labor had begun at midnight and the progress was delayed by the presence of a pelvic tumor. Two medical men had been trying to deliver her and had easily brought down one leg in front of the tumor. After much difficulty the second leg was brought down by a good pull, in the course of which one foot was broken away. Attempts to push up the tumor, while traction was made on the legs, failed. The tumor was found to be connected with the fetus and the whole mass was delivered with the fetus. The placenta was expressed after ten minutes without any difficulty, and was followed by a slight hemorrhage. The tumor was a large rounded mass occupying the lower end of a large female fetus. Apart from the coccygeal tumor, no other pathological abnormality could be discovered. The tumor was apparently solid and somewhat lobulated. It was freely movable and was attached by a broad pedicle, which sprang from the ano-coccygeal region. By digital examination by the rectum, it was possible to reach the upper limit of the tumor, which fell a little short of the sacral promontory. No postanal pouch, or loss of continuity in the rectal wall could be discovered. There can be little doubt that this specimen is one of those congenital adenomata that arise either in connection with the neurenteric canal of the embryo or from the coccygeal gland. Taking the whole of the facts into consideration, and especially remembering that the spinal canal was continuous with the interior of the growth, the balance of evidence seems to be in favor of the tumor in the present case being neurenteric in origin. This would conform with Mr. Bland-Sutton's view that all such "thyrodermoids" are in front of the coccyx, behind the rectum, and subjacent to the levator ani muscle.

**Influence of Maternal Nervous Lesions on the Vitality of the Fetus.**—This question has been studied by L. Butte (Jour. de Méd. de Paris, Feb. 22 and Mar. 1, 1903) through the production in pregnant rabbits of sciatic neuritis and meningomyelitis; the outcome of the experiments being that neither of these conditions, produced in rabbits a certain time before term, caused the death of the fetus before that of the mother; the latter having been killed a short time before term in order to ascertain the condition of the fetus.

**Larvated Malaria Simulating Threatened Abortion.**—The most unexpected and peculiar symptoms may appear in malaria, and for this reason, in malarial countries, when symptoms are not clearly defined, that disease should be taken into account, writes Granozzi-Antinori (Gazz. Sic. di Med. e Chir., March 1, 1903), who reports the case of a woman six months pregnant who developed uterine pain which, at first slight and transitory, increased in severity and so closely simulated the pains of uterine contractions as to suggest threatened abortion. Vaginal exploration was not possible, but absence of the slightest hemorrhage led to the belief that the symptom was not directly attributable to the uterus. Other measures failing to relieve, recourse was had to quinine, in the belief that the discomfort experienced might be due to uterine neuralgia of malarial origin. Immediate amelioration followed administration of minute doses of that drug, but upon its suspension the pains returned in full force. Encouraged by the previous improvement effected, and absence of any untoward effects from the use of the drug, the author administered a gram of quinine daily without opium or morphine, with the result that the patient's pain ceased entirely, her general condition improved, and at nine months she gave birth to a perfectly healthy child.

## NEUROLOGY AND PSYCHIATRY.

**Changes in Peripheral Nerves Produced by Toxic Substances.**—To determine, if possible, whether toxic substances could penetrate the integument in sufficient quantities to produce degenerative changes in the peripheral nerves without destroying the convexity of the superficial tissues, a series of animal experiments are reported by D. J. McCarthy (Univ. of Pa. Med. Bull., March, 1903). The investigation was instigated by the case of a man who after immersion of the arms in a secret preparation (necessary in his occupation and probably containing hydrofluoric acid), developed an acutely swollen, anesthetic condition of the hands, followed by paralysis and atrophy, progressive over a course of two years. The medicolegal aspects of the case are interesting. The animal experiments consisted of the application of various poisons to the skin of the extremities of rabbits and noting the effects on the skin and peripheral nerves. The local application of formalin (40-per-cent. solution) produced an intense and extensive degeneration, the result of an acute inflammatory process, but without destroying the continuity of or seriously interfering with the structure of the superficial tissues. Hydrofluoric acid does not differ from other corrosive poisons when locally applied. In weak solutions it may cause degenerative changes in the deep nerves, with minor necrotic lesions in the subcutaneous tissues without destroying the continuity of the integument. The effect of strong carbolic solutions is mainly on the superficial tissues, and it is only when these are extensively involved that the deeper nerves become degenerated. Acetate of lead produces changes less intense than the latter without involvement of the subcutaneous tissues or nerves. It seems quite probable, therefore, that certain poisons may penetrate the superficial tissues and cause inflammatory and degenerative changes in the deeper trunks without destructive lesions of the overlying tissues.

**Trunecek's Serum.**—The combination of inorganic salts suggested a few years ago for relieving the general symptoms caused by arteriosclerosis and used with success by several observers, led A. Gordon (Phil. Med. Jour., March 21, 1903) to employ the method to disturbed cerebral functions caused by circulatory changes of any origin. The internal treatment according to the modified formula given by Leopold-Levi was used in twelve cases, including arteriosclerosis, purely cardiac lesions and anemia. Of nine successful cases, the majority showed considerable improvement. In cases free from arteriosclerosis, there is probably a change in the physical or chemical properties of the blood, or in the blood-pressure. The author concludes that when iodides, nitrites, and other means used in such cases fail, the serum should be given a trial and sometimes a combination of both may be necessary. Several days or a week must elapse before a desirable result can be expected.

**Treatment of Neurasthenia.**—Attention is called to the value of respiratory exercises in the treatment of this and allied nervous conditions by J. W. McConnell (Univ. of Pa. Med. Bull., March, 1903). He reports success in neurasthenia, Sydenham's chorea, habit chorea, hysterical tremors and hysteria. Partial success was obtained in palsies of cerebral origin and in hysterical tremors. Failures were recorded in almost every disease for which the exercises were tried, but organic diseases of the cord and paralysis agitans were treated with appreciable improvement. Overexertion must be carefully guarded against and the regaining of voluntary control is the fundamental principle of respiratory exercises as a remedial agent. The rhythm of the breathing should be frequently changed and only simple physical exercise combined with the respiratory. Apparatus should be limited to pulleys or dumb-bells.

**Abnormal Constituents of the Urine after Epileptic Seizures.**—The results of the researches of Voisin on this subject are quoted by K. Inouye and T. Saiki (Hoppe Seyler's Zeitsch. f. Physiol. Chemie) as follows: Postparoxysmal albuminuria is observed in one-half of the cases, and in all forms of epilepsy. The status epilepticus appears to be always accompanied by albuminuria. This condition is constant in the same individual but it is quite variable as regards quantity. It arises in the first two hours following the epileptic attack and seems to be closely related to the congestion of the face. The authors, in agreement with the latest investigators, have only seldom found albuminuria following epileptic attacks. When it did appear it was trifling and evidently due to metabolic disturbances of the renal cells from oxygen privation. They also found no postepileptic glycosuria. The authors isolated from postepileptic urines an acid, which is not present in the urine in the intervals between the attacks. They are certain that this acid is identical with dextrorotatory lactic acid, and that the severe epileptic seizure causes an increased production of dextrorotatory lactic acid. The investigation of the proximate causes of the appearance of this substance in tne urine brings to light certain interesting facts. The extirpation of the liver in certain animals causes a distinct diminution in the amount of uric acid excreted; the nitrogen of the urine appearing mostly under the form of ammonium lactate. Under this condition also lactic acid has been found in the urine of dogs. Apparently lactic acid is one of the antecedents of uric acid, for, according to Wiener, the sarcolactic acid resulting from the metabolism of the tissues undergoes oxidation with the formation of tartaric acid, which uniting with another metabolic product, urea, produces dialuric acid; this substance together with another molecule of urea, forms uric acid. The disturbance of liver extirpation would include not only a failure of the synthesis of lactic acid, but also an absence of the oxidation of this substance into tartaric acid. The absence of the hepatic function results not only in the appearance of lactic acid in the urine, but also in diminution in the quantity of urea and uric acid secreted. The above facts would support the hypothesis that the appearance of dextrorotatory lactic acid in the urine of epileptics, is to be attributed to some disturbance of the functions of the liver produced by the epileptic seizures. If this hypothesis be correct, then one would expect that the appearance of lactic acid would go hand in hand with the diminution of urea and uric acid, which is not the case. The authors entertain no doubt that the formation of lactic acid after epileptic attacks is to be attributed to some other cause than the disturbance of the hepatic function. This cause might be found in the convulsions and the associated severe dyspnea. The investigations of Werther and Marcuse have shown that the convulsions produced by strychnine increase the production of sarcolactic acid. This increase is directly due to the oxygen starvation resulting from the convulsions.

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## TYPHOID FEVER IN INFANTS.

TYPHOID FEVER has, until very recent years, been considered to be an extremely rare disease in children under two years of age, and even most of the text-books on children's diseases have stated that as a rule, when continued fever of obscure causation existed in very young children, typhoid might always be excluded at once, because of the age of the child. As is very evident, from the discussion at the meeting of the New York Academy of Medicine, March 19 (see Society Proceedings in this week's NEWS, p. 711) doubts have been growing with regard to this position during the last ten years. The infrequency of typhoid fever in children was, in former times, considered to be due to the existence of a quasi-immunity to the disease in very early years. Now it is very generally recognized that whatever protection very young children have is due not to any natural immunity, but to the methods of feeding infants which usually preclude the possibility, or lessen very much the danger of typhoid infection. Breast-fed infants have practically no opportunity to become infected. More than this, it seems not unlikely, as was pointed out by Ehrlich, some years ago, as the result of his experiments upon animals, that mother's milk frequently contains immunizing principles that provide a certain amount of protection to nursing offspring, for diseases the mother has had. The custom of sterilizing infant's food much more carefully than that for adults has also served to guard young children from typhoid infection, until they begin to share family meals and associate freely with members of their own household and children from neighboring families.

Unfortunately opportunities for observation furnished by the extremely bad sanitary conditions of certain of our large cities in this country have demonstrated that even these protective factors are not sufficient to guard young children completely from the dangers of contracting typhoid fever. In Philadelphia a number of cases of the disease have been seen even in nursing infants and there is a consensus of opinion among those who have most experience that typhoid fever is not at all infrequent under the age of two and one-half years. In Chicago, too, some cases of the disease have been seen in the first years of life. Where there are frequent opportunities for infection there is always good reason to suspect continued fever in young children of being typhoid. Our experience in New York has fortunately been such as not to make the application of this diagnostic rule very frequently necessary, but it must not be forgotten that in families where typhoid fever already exists any member of the household, no matter how young, may contract it.

The affections that simulate typhoid fever and that undoubtedly have sometimes been reported as typhoid are obscure pneumonia, especially of the central variety, certain forms of nephritis, usually low grade in character and in the terminal stage and some insidious varieties of colitis in which diarrhea and abdominal tenderness are prominent features. Unless there is definite exclusion of these conditions, typhoid fever can hardly be justifiably diagnosed here in New York. The disease is probably not so infrequent as the very fortunate experience of the New York Foundling Asylum would seem to indicate. The reason for this appears to be that in the absence of distinct epidemics of typhoid fever here in New York, there seldom have been a number of cases of the disease in the same household, thus exposing infants as much as in other cities, and if occasionally there were several cases, foundlings have been doubtless preserved from the disease by removal. Much as we have to complain of our water supply, at least it has not sown typhoid broadcast.

All the authorities are agreed that the clinical course of typhoid in children is quite different from that in adults. Goodwillie's steplike rise of temperature, so characteristic of incipient typhoid in later life, is practically always lacking in children, and there is apt to be an abrupt initiation of symptoms. All are agreed, moreover, that the affection, in the very young particularly, is characterized by nervous rather than intestinal symptoms. At the beginning the disease often simulates meningitis very closely, and during the course of the disease the meningeal symptoms are prominent. Epistaxis is rarer than in adults and the disease does not begin so frequently with diarrhea as might be expected from the experience with adults and the ease with which children's peristalsis is usually interfered with and the frequency of diarrhea for slight causes. The skin eruption in children is likely to be much more extensive than in later years. A number of anomalous eruptions have been reported as occurring in incipient typhoid fever in children, but it is probable that these are not always due to the typhoid fever alone. In recent years the use of coal-tar products in febrile conditions and the well-known susceptibility of children to these drugs gives rise to the suspicion that many of the peculiar cutaneous lesions reported were really due to the administration of synthetic antipyretics. Subcutaneous hemorrhages sometimes occur in children and, if extensive, indicate a very bad prognosis. Slight petechial spots, however, must not be considered to have serious significance.

It can readily be understood that typhoid fever in children is not easy of diagnosis by the ordinary clinical criteria. The only absolutely pathognomonic sign is the occurrence of the Widal reaction. The bacteriological examination of the stools, when positive, gives very definite and valuable information. As the Widal reaction may not occur until as late as the twenty-eighth day, the test must be made every day during the continuance of the fever. No number of negative Widal reactions excludes typhoid fever absolutely in a case of continued fever until convalescence is practically complete. In the meantime it must not be forgotten that the stools and the urine may contain typhoid bacilli in large quantities and may consequently prove a source of active contagion. Even with the assistance of the Widal reaction typhoid fever in children remains one of the most difficult diagnostic problems with which the modern pediatrist has to deal. Careful investigation is needed in order to decide just how frequent the disease is and whether there may not be a definite clinical course that will make the affection more readily recognizable in children than is the case at present.

## INCREASE OF RABIES AND ITS PREVENTION.

During the first three months of the present year, four mad dogs have been reported as running amuck in Greater New York and its environments. A number of persons have been bitten and especially a number of children have had to undergo treatment prophylactic for hydrophobia. The last one of these mad dogs reported is said to have bitten some ten children and, needless to say, caused a number of serious frights with consequent emotional disturbances and neurotic tendencies of various kinds. It seems very evident then that special measures are needed in and around New York, or the stringent enforcement of protective regulations already existent, in order to secure reasonable immunity from these frequent unfortunate occurrences. The dates of the development of the rabies in the successive animals would seem to show that there is a series of such accidents likely to occur in the near future, since each succeeding mad dog announced has come about at the end of the ordinary incubation period for rabies and would seem to have been affected from the bite of the preceding animal victim.

It is absurd to say that such dogs are not suffering from true rabies and that the public is more scared than hurt. The daily newspapers may add to the sensational details of these occurrences, but there is no doubt of the real danger involved. Not long ago the eight-year-old child of a prominent physician of New York City died as the result of the bite of one of these mad dogs. There are, it seems, even some physicians who still consider that rabies in human beings is more of an imaginary than a real ailment. In this case, however, the patient was seen by specialists of the best reputation and there could be no possible doubt that the affection was true rabies. The reported mad dogs have been genuine cases of rabies and the amount of danger involved is so great that even the most yellow journal could scarcely exaggerate it. It is not that hydrophobia is increasing, but it is that special opportunities for infection have been provided, and unless measures are taken to lessen these, the disease will continue to be more and more of a menace to human life.

In Germany, where the regulations with regard to the licensing, care and muzzling of dogs are enforced much more strictly than here in America, hydrophobia is not common and the Pasteur Institute established in Berlin some three years ago was founded with the idea rather of treating such recognized cases of the disease as occurred along the Russian border, where rabies is not uncommon. Rabies has infected the wolves and certain other animals in Russia and is constantly communicated to domestic animals with the result that it spreads to human beings. Otherwise, however, Germany furnishes an excellent example of how much may be accomplished by proper prophylactic precautions in the prevention of rabies in human beings. In England, where the Anglo-Saxon theory of the liberty of the individual has been pushed so far as to make the vaccination laws quite ineffectual, there is still enough popular sense left to insist on the maintenance of a proper attitude with regard to the liberty allowed animals and the country consequently suffers very little from hydrophobia.

Anyone who has seen the suffering of one human being afflicted with this fatal disease, especially when the patient is a child, will readily concede that no amount of inconvenience caused animals by muzzling or other protective arrangements can ever be considered too much to prevent such suffering. There is no doubt that neglect has allowed the accumulation of ownerless dogs in this country to an extent that renders our large cities frequently liable to incursions of rabid animals.

There is need of a thorough awakening to the danger. Surely the Board of Health can draft new regulations, or insist on the enforcement of present laws, so as to secure immunity from the evil. If we were once rid of rabies, it is probable that the disease would never again become a menace.

### ACCIDENTS IN FOOTBALL.

A very general opinion, fostered by the public press and our maiden aunts, is that football is a brutal, boorish game, that tends to decapitate or disembowel the flower of our university youths, and that it is a good thing there are only eleven men on a team, or there would not be members enough to go around after Thanksgiving Day. It is faintly hoped and even suggested that when the college presidents have eased their minds on the matter of endowments, they will bend them to suppressing football.

May the day be far off! Let statistics come to the fore and show for the comfort of parents with sons, and for the support of the grand old game, that football does not kill and maim anything like the number of students that are popularly supposed to be injured by it.

Professor E. G. Dexter, of the University of Illinois, has published an exhaustive study on accidents from college football in the April number of the *Educational Review*. A questionnaire brought replies from a great number of the large and small colleges of the country, concerning the number of students controlled, the number playing football, and how many were either killed, seriously injured, or permanently disabled.

He found that about one college man in ten the country over plays football, the proportion being larger in the smaller colleges, and of these about one in thirty-five is injured each season sufficiently to necessitate loss of college duties. But of these the number who are permanently injured or die from the effects of the game is so small as to be practically a negligible quantity. Of recorded deaths he found only three in 22,766.

The general feeling of the college presidents and of the athletic instructors appears from their expressed opinions to be in favor of football, and to lay little or no stress on broken bones.

Sentiment aside, we find from accident insurance statistics that football is a much less dangerous sport than many others.

## ECHOES AND NEWS.

### NEW YORK.

**Appointment of Dr. Pedersen.**—Dr. Victor Cox Pedersen has been recently appointed anesthetist to the Roosevelt Hospital, First Surgical Division, and also assistant anesthetist to the New York Polyclinic Medical School and Hospital.

**Columbia Faculty Changes.**—Drs. E. L. Dow and John S. Thacher were appointed demonstrator of pathology and clinic lecturer in medicine, respectively. The professorship of ophthalmology made vacant by the resignation of Dr. Herman Knapp was filled by the appointment of his son, Arnold H. Knapp, M.D. The registration of Dr. G. M. Tuttle, professor of gynecology, was accepted, and it was decided not to fill the professorship for the next academic year, Dr. Edwin B. Cragin was assigned in charge of the lecture and clinical work of the department.

**Rabies and the Bergh Society.**—Dr. H. D. Gill, a veterinary surgeon, had considerable fault to find with the Society for the Prevention of Cruelty to Animals in a paper on "Rabies," which he read last week before the Alumni of Bellevue Medical College (to be published in full in the Medical News). If suitable regulations are not enforced, he said, the disease will surely increase and the health of the people will be unnecessarily jeopardized. Then he said of the S. P. C. A.: "This private corporation enjoys a yearly revenue of many thousands of dollars from an unconstitutional dog tax, and the only service it has rendered to the people is to catch all unlicensed dogs that these men may happen to run across, throw them all together into a wagon, where they fight and bite until the wagon reaches the pound, when, I am told, the same thing is practised. By their ignorant methods this society may be accessory to the spread of rabies, for a dog may bite others which may be reclaimed later and taken home, where it may develop the disease. It is high time that this very serious dog question should be taken out of the hands of this private corporation, whose only care seems to be to collect license fees, and placed where it properly belongs, that is, under the control of the municipal Board of Health."

**Dr. Gulick and Physical Training in Our Schools.**—Dr. Luther H. Gulick, recently appointed director of physical training, desires that the borough directors shall relinquish the oversight of the schools of the boroughs and devote themselves to other work. The borough directors of physical training contend that the Board of Education has not provided that Dr. Gulick shall occupy any higher rank than they, and that they are all directors, the only difference between themselves and Dr. Gulick being in the salary. The new director receives $4,000 a year, the women directors $2,500, and the borough directors $3,000 a year. The city charter says that the directors of all special branches shall be under the supervision and direction of the City Superintendent. The borough directors are said to be willing to coöperate with Dr. Gulick, but do not desire to be known as his subordinates. Dr. Gulick says that a plan will be in working order by the time the schools open in September, and that there will then be a uniform course of physical instruction.

**New Ordinances.**—Mayor Low last week approved the following measures passed by the Board of Aldermen: Authorizing the issue of corporate stock to the amount of $125,000 for the purpose of providing means for the completion of the new Harlem Hospital, which will be a handsome and commodious annex of Bellevue Hospital. Approving the issue of $250,000 for the construction of new buildings and additions to buildings under the jurisdiction of the Department of Public Charities. Authorizing the issue of $90,000 for the construction of an interior public bath in the Borough of Brooklyn. Authorizing the issue of $75,000 in corporate stock to pay the expenses of preparing the necessary plans and specifications for the construction of a new Bellevue Hospital to take the place of the present old structure.

**Treatment of Abnormal Children in Our Schools.**—The Board of Superintendents has before it for consideration a report of Associate Superintendent Edward L. Stevens upon the subject of abnormal children in the public schools of the city. Mr. Stevens was appointed by Dr. Maxwell to make the report as a result of the agitation by medical specialists. Now that the Board of Superintendents has decided to consider the question, the hope is indulged in that some definite system for the education of mentally weak and backward children will be forthcoming. "The question of providing special instruction in the elementary schools for pupils classed roughly as defective, backward, or dull children, has been considered for some time, prior to this year, in a more or less desultory fashion," said Dr. Maxwell in his recent report. This year, he says, the problem has been considered more in detail. Experiment stations have been established in six public schools in Manhattan and the results are being studied closely. "It may be found wise," said the City Superintendent, "to place classes for certain pupils in school buildings and those for other pupils whose condition is more serious in special buildings so situated as to permit the teaching of gardening and similar outdoor occupations. In all cases specially qualified teachers will be required, and in some instances the services of a trained nurse may be found necessary. But, above all, I wish to emphasize the importance of classifying children properly. In many cases I think that diagnosis after careful examination by a medical expert should be required."

It was decided there that the number of so-called defective children exceeds the report made to the Board of Education by the principals of the city some time ago. At that time it was stated that there were 8,000 defective children—that is, children who were behind the normal in the graded classes. It was stated by Miss Alida S. Williams, who has devoted considerable time to the study of the atypical child, that Professor Monroe of Stanford University, who examined 10,000 school children in California, reported 10 per cent. "mentally dull" and 3 per cent. "feeble minded." This mental dulness is oftentimes due to deafness or to defective eyesight, sometimes to adenoids. In other cases it may be due to insufficient nutrition and to sleeping in rooms without ventilation.

**Vaccination and Parochial Schools.**—Attorney-General Cunneen has decided that Catholic parochial schools are outside the jurisdiction of the State Public Health law, and that neither local nor State health officials can prevent non-vaccinated pupils from attending them. This is a sweeping victory for the Catholic schools, emphasizing their distinction from the public school system and freedom from the public school laws. It settles a long fight between the local and State health officials and the Dunkirk parochial schools. An order having been issued, excluding several hundred non-vaccinated pupils from the public schools, many entered the parochial schools. Father Moselin, head of the parochial schools, refused to comply with the law, threatening to eject any one who attempted to enforce it. An appeal to the State Board and then to Attorney-General Cunneen resulted in his decision to-day.

**Dr. Ewald.**—Dr. M. I. Knapp, of 136 East Seventy-eighth street, would be pleased to hear from all former pupils of Dr. C. A. Ewald, with the purpose of giving a reception to honor his visit to America. He is expected to arrive May 4.

## PHILADELPHIA.

**Anti-Spitting League Formed.**—As a result of the anti-spitting ordinance passed by Councils a society has been formed under the title of the Anti-Spitting League, the sole object of which will be to begin an active crusade against expectoration on the sidewalks and other public places. The plan and scope of the league have been endorsed by the medical fraternity and by all public-spirited citizens. The idea of the league is to call for a spontaneous enrollment of members. Any one is eligible to active membership by sending 10 cents to the secretary, who will send them an engraved certificate and an emblem which is quite unique, consisting of a foot which is crushing out the life of a snake.

**Site Being Cleared for New Jefferson Hospital.**—The work of demolishing the old Jefferson Medical College and the adjacent building to make room for the new Jefferson Medical College Hospital, was begun March 31. The old college building was erected in 1828, remodeled in 1838, and again in 1873. The new hospital will be erected in two sections, the first extending from the present hospital to Tenth Street. On its completion the present hospital will be torn down and the remainder of the projected new building erected. The hospital building now in use was erected in 1877.

**American Philosophical Society.**—At the recent meeting of this Society in Philadelphia twenty new members were elected, five of them being foreign residents. Among the Philadelphians was Dr. Alfred Stengel. Action was taken to provide an adequate celebration in 1906 for the two hundredth anniversary of the birth of Benjamin Franklin, the founder of the organization. Dr. D. C. Gilman spoke of the work of the Carnegie Institution in Washington. The first memoirs accepted for publication are four volumes of astronomical observations by George W. Hill. Among the many papers read at the meeting was one by Dr. M. P. Ravenel regarding the transmission of tuberculosis.

**Mayor Ashbridge Congratulated by Philadelphia Hospital Board.**—A committee representing the Medical Board of the Philadelphia Hospital presented to Mayor Ashbridge before the close of his term a set of resolutions expressing the Board's appreciation of his work in bringing about improvements at the hospital. Among them were cited: The erection of a Children's Hospital, the erection of the maternity pavilion and of the pavilion for venereal diseases. The beginning of the construction of a pavilion for consumptives, the separation of the insane department from the Almshouse, an end to which the efforts of the Medical Board had hitherto been fruitlessly directed for twenty years, and the greatly increased facilities for clinical teaching through which the institution is advancing into the foremost rank of teaching hospitals, thereby increasing the attractions of the city for medical students and assisting in maintaining its prestige as a medical center.

**The Prevention and Cure of Tuberculosis.**—In an article written for the *Public Ledger* Dr. S. Solis Cohen, after stating that the establishment of the Phipps Institute in this city is a matter of congratulation for local physicians and the whole community, as are also the other institutions for the treatment of tuberculosis, says "no institution of research, education, or charity, no multiplication of such institutions and no amount of merely scientific work can succeed in stamping out tuberculosis or in bringing the means of its prevention and cure within the reach of all the thousands needing such help. We know, and have known for hundreds of years, how to prevent tuberculosis, and, practically speaking, how to cure it; but the difficulty lay and still lies in the application of that knowledge. This difficulty and its remedy present problems of sociology and economics, not of medicine. . . . The cause of our failures has not been in the old teaching, but in our proneness to depart from the safe path of the old truths, following some will-o'-the-wisp, as, in recent years, Koch's tuberculin, into the bog of error. The greatest of all errors in treatment has been the search for a far-off specific, to the neglect of simple, potent and proved means near at hand." After mentioning the effect of average city surroundings on people accustomed to outdoor life and, on the other hand, of pure air, food, etc., on tuberculous poor from the city, Dr. Cohen says that "for every one saved from tuberculosis in this way, ninety-nine are being made tuberculous by the artificial and unwholesome conditions of our contemporary social organization. Physicians can only point out these conditions, it is for economists and statesmen to determine the remedy. That a remedy can be found, I doubt not. Socialists will tell us that it lies in the adoption of the doctrines of Karl Marx; Single-Tax men will say that Henry George has pointed it out; the professors of economics at our colleges and universities will demonstrate clearly the gross fallacies of Marx, and will cast ridicule upon the teachings of George, but will offer instead nothing more explicit than a shrug of the shoulders. I have here no economic theory to advocate. I would only deprecate the shoulder-shrugging attitude, and urge the necessity for studying the social situation from the viewpoint of hygiene, and for studying the problems of preventive medicine from the viewpoint of sociology. Even now things can be done by law, others by private benevolence that will help a little—for example, the abolition of child labor; the shortening of the general working day; improvement in civic sanitation; better housing of the poor; prohibition of back to back building; regulation of the height of buildings with proportion to width of streets; increase in the number of small parks and public playgrounds, and similar measures. I do not ignore in this the importance of infection in spreading tuberculosis, but, as I have elsewhere said, it is better to try to prevent conflagration by building incombustible houses than to attempt to banish fire from the service of man."

## CHICAGO.

**Gift for Children's Hospital.**—At a recent meeting of the members of the League of Cook County Clubs, held in the Fine Arts Building, two subscriptions, amounting to $175,000, had been pledged to the support of the Children's Hospital Society of Chicago. After describing the aims and purposes of the organization recently formed, Dr. Billings said that the permanency and success of the movement is already assured. One individual came to him and offered to donate a large tract of land for a building, or give $100,000. Another person promised to give $75,000. He said there are plenty of hospitals in Chicago; there are accommodations for 6,000 persons, but few free beds. The accommodations for children are totally inadequate. All the hospitals are doing good work along individual lines, but far better results might be obtained by coordination. The purpose of this Society will be to bring these different institutions into a closer relationship.

**Chicago's Health.**—The bulletin of the Health Department for week ending April 4, 1903, says: For the last half dozen years or more the department has endeavored to push a campaign of education against influenza or the "grip." To the laity it has dwelt on the highly infectious character of the disease and the consequent necessity of isolation of cases, of avoiding all unnecessary contact with its victims, of the importance of disinfecting the discharges from nose, mouth and throat, and of the danger of trying to "fight off" an attack or of self-dosing, instead of seeking competent medical advice and faithfully following it. To the medical profession it has tendered the services of its laboratory and its expert bacteriologists, on the theory that a prompt and certain recognition of the disease is more than half the battle, and that such recognition can only be made by the microscope and culture plate.

A contributory cause of the high mortality of the first four months of the year has been the "freak" weather, as heretofore noted. The "blizzard" of last Friday—with a drop of fifty degrees in twenty-four hours—will show its effects within ten days or a fortnight in an increase of deaths, especially from diseases of the respiratory system and of the kidneys, but with the increase of sunshine which may now be reasonably expected there should be a decline in the prevalence and the virulence of such germ diseases as diphtheria, scarlet fever, measles and whooping cough.

Rabies in a mild form is still prevalent in the vicinity of Fifty-fifth and Halsted streets. During the winter three dogs have been sent to the laboratory from this locality. Post mortems on the animals showed them suffering from hydrophobia. During the last week a cow at 4,800 Michigan avenue was bitten by a dog that also bit some horses and then escaped. Measures have been taken to prevent the disposal of this cow until it is certain as to the result of the bite.

Persons having valuable dogs in this neighborhood should keep them shut up, as it is reported that a dog affected with rabies is still at large.

## CANADA.

**Will the Cigarette Be Banished from Canada?**—During the past week the cigarette and cigarette smoking has been under discussion in the Canadian House of Commons on a motion for the prohibition of the manufacture, importation and sale of the "white coffin nail," as the little weed was named by one of these denouncers. The motion carried by a vote of 103 to 42, but to give this decision effect a bill will have to be introduced by the government.

**Victoria, B. C., Isolation Hospital.**—During 1902 the number of patients treated in the Victoria, B. C., Isolation Hospital numbered 92 as against 80 for 1901. The total days' stay was 2,101 as against 1,743 for the previous year. The total cost of maintenance for 1902 was $9,279.44, as compared with $5,925.93 for 1901.

**Personals.**—Dr. Colin Campbell, formerly house surgeon in the Toronto General Hospital, and later on the C.P.R. "Empress of India," has recently been appointed house surgeon of the Royal London Ophthalmic Hospital, City Road, E. C., the oldest and most famous eye hospital in the world.

**Making Doctors by Act of Parliament in Quebec.**—A committee of the Quebec Legislature is at the present time engaged in the benevolent task of making lawyers, druggists, dentists and doctors by act of Parliament. Presumably some of these fortunate, if incompetent, individuals have found that the examination is a superfluous way of becoming licensed to practise in Quebec, and have thus resorted to the simple process of getting a bill passed by the legislature. When a legislative body commences this practice, there is no telling where it will end.

**The French-Canadian Medical Society of Montreal.**—On the evening of Thursday, March 26, there was held in the buildings of the University of Laval, Montreal, a very largely attended meeting of the French-Canadian Medical Society, of that city. The Roddick law for interprovincial registration, now known as the Canada Medical Act, 1902, was the chief topic for discussion; and in response to the query as to whether the Society favored the general idea of interprovincial registration, there was an enthusiastic affirmative voice.

**The Canada Medical Act in the Quebec Legislature.**—The ratification legislation required from the Quebec Legislature for the Roddick law is now in its second reading in that House. The opinion prevails pretty generally in medical circles in Montreal that the country practitioner of French-Canadian extraction is going to kill this measure outright. In moving the second reading of his bill, Mr. Hutchison explained at full length the measures and provisions of the Canada Medical Act, stating that there were French-Canadians all over the Dominion of Canada who wanted to have physicians of their own nationality and language, and that therefore the province of Quebec had more to gain by this act than any other. The second reading of the bill is being opposed by Dr. Pellitier on the grounds that it is not good for the profession, and that the standards of the other provinces are not up to that of Quebec. This latter will be a piece of news for the other provinces.

## GENERAL.

**Women Physicians in Russia.**—The Medical Institute for Women in St. Petersburg recently gave diplomas, after a five years' course, to 111 students, 93 of whom passed their examinations "with distinction."

**Navy in Need of Young Surgeons.**—There is a great demand in the navy for young medical officers. The need of assistant surgeons in the medical corps is very great, there being at the present time twenty-seven vacancies in that grade. Surgeon-General Rixey is trying to attract young medical men into this service. He is now in the South inspecting a hospital at Pensacola. He intends addressing several medical colleges and calling to the attention of the students the desirability of a naval career. Not long ago he delivered an address at the Jefferson Medical College, in which he dwelt upon the opportunities for young medical graduates in the navy. The work to be performed by the medical corps in the navy is growing every year. The authorized strength of the navy now is about 38,000 and within the next six years will probably reach 50,000. The enlistments and reenlistments require the constant attendance of surgeons to make physical examinations and besides this routine work there are fourteen naval hospitals, with naval stations, navy yards and receiving ships, where the services of members of the medical corps are needed. Applicants for admission in this branch of the service must be between 21 and 30 years of age, physically sound, of good high school education and master of their profession to a degree that would insure a successful career in civil life.

**Denver Academy of Medicine.**—The Denver Academy of Medicine, formed to maintain a home and meeting-place for the profession, and to provide for a medical library, was organized March 31. The officers chosen for the ensuing year were: President, Henry Sewall. Vice-President, George B. Packard. Trustees, W. A. Jayne, W. W. Grant, Thomas H. Hawkins, L. E. Lemen, H. W. McLauthlin, I. B. Perkins. Secretary, C. K. Fleming. Treasurer, Frank E. Waxham. Librarian, C. D. Spivak.

**To Pasteur Institute.**—The Figaro states that Dr. Emile Roux, the sub-director of the Pasteur Institute, intends to donate the Osiris prize of $20,000, which has just been awarded him, to the Pasteur Institute. This prize was founded by M. Daniel Osiris, a wealthy Parisian, to be awarded to the person that the Institute of France considered the most worthy to be thus rewarded. The Institute of France chose Dr. Roux as the recipient.

**Football and Accidents.**—The football controversy has been much simplified during the past week through Prof. E. G. Dexter's statistics of football accidents printed in the *Educational Review*. His figures are based upon returns from sixty colleges, cover ten years of time, and include the records of 1,374 separate teams. Out of the 22,766 men who had been members of these college elevens 654, or 2.9 per cent., had received injuries serious enough to necessitate absence from college exercises. Professor Dexter estimated the ratio of permanent injuries at one for every 2,846 players. Probably few of the rougher sports—such as hockey, polo, riding to hounds—could make so favorable a showing, and it appears that the agitation for change in the football rules should bear, not upon the danger of the game, but upon the dulness and brutality of the spectacle of twenty-two men butting and striving and finally falling into a heap. This manner of play is foolish and demoralizing, even though it be not in any special sense dangerous; the Rules Committee should legislate fearlessly against it. Finally, the fatalities and serious accidents which are reported every year to the discredit of football occur chiefly among unseasoned or very young players, who should not be attempting a game that requires the most perfect condition and training.

**Yellow Fever Mosquitoes and Ocean Vessels.**—Assistant Surgeon Grubbs, in charge of the Gulf quarantine station, has just issued a bulletin in which he has settled the question as to what extent and under what circumstances mosquitoes infected with yellow fever germs can be carried by vessels. From June to November last he inspected vessels arriving from ports where the presence of the *Stegomyia* render them liable to infection. Of the eighty-two vessels from possibly yellow-fever ports, sixty-five had no mosquitoes on board at any time during the voyage; five had the insects on board at port of departure; nine reported the appearance en route of *Culex,* or harmless mosquitoes, and three brought *Stegomyia* to the station. All three of the last group were from Vera Cruz, a yellow-fever port, and the voyages lasted on an average seventeen days. Surgeon Grubbs gives the mosquito history of each of the three and reaches these conclusions: First, that mosquitoes can come aboard a vessel under favorable conditions when the vessel is not over fifteen miles from shore; second, that *Stegomyia* can be carried from Mexican or West Indian ports to those of our Gulf States; third, that they can board a vessel lying at anchor a half mile or less from shore, being conveyed by the open lighters used or flying aboard, and, finally, that a vessel moored a short distance from land may become infected with yellow fever, our old beliefs to the contrary notwithstanding.

**Death Rates and the Census.**—According to the *Evening Post*: "In the course of an important criticism of the vital statistics of the census of 1900, published by the American Statistical Association, Frederick L. Hoffman, the well-known statistician of the Prudential Insurance Company, says: 'Too much emphasis cannot be put upon the primary consideration of the elements of the population in different communities with due regard to age and sex. Whatever may be said against the use of crude death rates, which are as misleading as they are generally applied to unworthy purposes, applies with special force to specific death rates for different periods of life, and for cities where other race elements than the native white go far toward the making up of the larger part of the population. To carry this point a little further, I may quote the death rate at the age period of 25 to 34 years for Natchez, Miss., given as 35.1 per thousand, against a death rate of only 9.0 per thousand for Newark, N. J., but Natchez has a negro population of 58.1 per cent., whereas that of Newark forms only 2.7 per cent. of the total.

"'It is this indifference to the age and race distribution of the population which has led to such false views in regard to the health of tropical cities, especially Havana, Cuba. If the mortality of Havana is analyzed by age periods, and with due regard to color, it can be shown that, while the death rate of white males, ages 40 to 49 years, is 16.2 per thousand in Washington, D. C., it is 31.8 per thousand in Havana, Cuba—a very radical and material difference, wholly out of proportion to and not at all indicated by the crude death rate, which represents the local mortality as fairly satisfactory. The crude death rate very rarely, if ever, can be relied upon in making comparisons of the mortality of different communities, although it is a fairly satisfactory index factor of local conditions where the mortality of a given city is compared with itself for a period of years.'"

**Obituary.**—By the death of Dr. Guy Bryan Miller at Paris on Tuesday last, New York has lost one of her most promising young men in the very beginning of his career. Dr. Miller has only just completed his work at St. Luke's Hospital, after graduating at the College of Physicians and Surgeons in 1898.

## CORRESPONDENCE.

### MUSCLE TONE AND THE REFLEXES.

*To the Editor of* Medical News:

Dear Sir: In your issue of March 28, page 618, Drs. Fraenkel and Collins make the statement as a result of their studies of muscle tone that "whenever the neurogenic tone was markedly increased or decreased the tendon-jerks were increased or decreased correspondingly." They also conclude "that disease of the posterior tracts caused hypotonia (hypomyotonia) and disease of the pyramidal tracts caused hypertonia (hypermyotonia). Their conclusions were based upon the examination of 230 patients. I fail to notice among any one of these cases any cases of the so-called combined scleroses, particularly that variety usually spoken of as ataxic paraplegia.

I have the records of four cases of ataxic paraplegia recently observed, in each of which the classical symptoms of that syndrome,—marked ataxia, increase of knee-jerks, double ankle clonus, no sensory changes, no fulgurant pains, no Argyll-Robertson's pupil, no optic atrophy, and no bladder symptoms, and yet each one of these cases presented such marked hypomyotonia that it was possible to bring the knees to the face without any flexion whatever, and without producing any sense of pain or tension in the hamstrings.

In October, 1901, I presented one of these cases to the Cuyahoga County Medical Society for the particular purpose of calling attention to this degree of hypomyotonia in a condition where we would naturally expect increased tone of the muscles because of the marked increase of the reflexes. For the past three years I have taught that in most spastic conditions we have hypermyotonia, but whenever we have an affection of the posterior columns of the cord, notwithstanding the spastic symptoms which may be present, and due to involvement of the pyramidal columns we nearly always observe hypomyotonia.

In the discussion which followed Drs. Fraenkel and Collins' paper, Dr. Walton called attention to the occurrence of hypomyotonia in the spastic condition seen in Erb's type of syphilis of the cord. I have observed this in several such cases.

In a case of epidural tuberculous abscess of the posterior and right side of the cord which presented all of the classical symptoms of an ataxic paraplegia, marked hypotonia existed.

Also, in a case of alcoholic neuritis of sudden onset in a young man of twenty-eight years, in which ataxia was most marked, hypomyotonia was present.

In two cases of undoubted multiple sclerosis whose axial symptom is a marked ataxia, hypomyotonia is well marked, notwithstanding the increased knee-jerks, double ankle clonus, jaw-jerk and nystagmus. My clinical experience does not at all bear out Dr. Collins' statement that Dr. Fraenkel has established the relationship between myotonus and the reflexes. Indeed, it seems to me that in organic spinal ataxias, whether we have spastic symptoms or not, we are quite certain to find hypomyotonia.

Since the word hypertonus has been used for many years by the oculists to describe the increased muscular tension in the ocular space I have heretofore objected (*Philadelphia Medical Journal,* Nov. 11, 1899) to using the words hypotonia (Fraenkel's sign) and hypertonia (Kernig's sign) but believe that when we wish to describe normal muscular tone we should say myotonus; when the tone is excessive, hypermyotonus, and when lessened, hypomyotonus. These terms express clearly and scientifically our meaning, and if etymologically correct, as I believe them to be, should be used.

Cleveland, April 2, 1903. Charles J. Aldrich.

## TRANSACTIONS OF FOREIGN SOCIETIES.

### British.

EXCRETION OF SODIUM AND POTASSIUM IN CASES OF RENAL DISEASE—HUMAN AND BOVINE TUBERCULOSIS—TREATMENT OF EPILEPSY—A CASE OF HYPERPYREXIA ASSOCIATED WITH THROMBOSIS OF THE VENA CAVA INFERIOR.

Dr. W. P. Herringham, at the meeting of the Pathological Society of London, held March 3, 1903, read a paper on the Excretion of Sodium and Potassium in Cases of Renal Disease. In experiments on the toxicity of urine when injected into the blood of animals, an account of which was given to the society three years age, he had been led to disbelieve Bouchard's explanation and to conclude with Feltz, Ritter, Astachensky and others, that all the symptoms seen in rabbits might be accounted for by the potassium salts held in solution. There was no necessary connection between the toxicity of urine and uremia. Indeed it seemed to him probable that uremia was not due to the retention of any normal product, but to something abnormal. In patients who died there was found great, in some cases complete, retention of sodium. He had made 16 analyses in 11 cases of chronic interstitial nephritis, and of these six were fatal. In every one of them the sodium excretion was nil or very small. It was not so in any of the five cases which did not end fatally. He had made 20 analyses in nine cases of diffuse or parenchymatous nephritis and of these two were fatal. Both showed complete absence of sodium from the urine on one or more days. None of the seven cases in which recovery resulted exhibited this. Thinking that it might be due to diet or that the sodium might be passed in the feces he had in one case of interstitial and in one case of parenchymatous nephritis analyzed the diet, the urine and the feces for a series of days. These were included in the numbers given above. Retention of sodium was not, however, peculiar to Bright's disease. Salkowski had already shown it to occur in several acute fevers. Dr. Herringham had also found it in two cases of large ascites repeatedly tapped. In one of them there was no sign whatever of kidney disease, but the other was a doubtful case. The latter had left the hospital and could not be traced; the former was still an in-patient. The retention could not be supposed to be due to inability of the kidneys to excrete sodium while excreting potassium freely. It must be due, therefore, to some need of sodium within the organism. In the case of a large ascitic effusion yielding roughly 20 pints every fortnight of fluid containing 0.3 per cent. of sodium the need was obvious. But this did not seem to apply to the cases of interstitial nephritis which had little edema.

Dr. Nathan Raw, at the meeting of the Liverpool Medical Institution held Feb. 26, 1903, read a paper upon Human and Bovine Tuberculosis. It must be admitted, he said, that the great body of experimental evidence was in favor of Koch's first contention that the two diseases were distinct. Phthisis pulmonalis was essentially a disease of young adult life. It was rare to see it as a primary infection under twelve years, the great majority of deaths taking place between the ages of thirty and forty years, as his tables would show. On the other hand, strumous or tuberculous joints, enlarged joints, spinal diseases and abdominal tuberculosis with tabes mesenterica, were essentially diseases of infancy and childhood, and were only rarely seen in adult life. From these general clinical and pathological observations, Dr. Raw inclined to the opinion that primary intestinal tuberculosis, tabes mesenterica and other tuberculous affections of the serous membranes in children were probably bovine tuberculosis conveyed by milk and were not in any way related to human tuberculosis, although the bacillus of Koch was found in them all and was identical. Veterinary authorities, such as Nocard, Bang, Dollar and McFadyean, agreed that about 30 per cent. of dairy cattle suffer from tuberculosis. Dr. Raw wished to point out that the infection commenced in the mesenteric glands from the intestines, slowly spread to the retroperitoneal glands, then through the diaphragm to the glands in the posterior mediastinum and finally to the lungs. If the child lived long enough, the brain might be affected too. At necropsies this remark had been corroborated again and again. Dr. Raw stated that taking all these facts into consideration, and after a careful study of tuberculosis in all its forms during the last ten years, he was of opinion that bovine tuberculosis was very virulent for children and was accountable for tabes mesenterica and other varities of abdominal tuberculosis, in fact, that it was more virulent to children than was human tuberculosis. There was much evidence, also, that acute miliary tuberculosis, especially that of the typhoid form, was in reality a bovine tuberculosis produced by ingestion of food. Considering that tuberculosis was so common, and even increasing in this country, among dairy cows, something ought to be done by the legislature to prevent the wholesale distribution of tuberculous milk to the public. A more rigorous inspection of dairy cattle should be made by the health authorities, and as it was perfectly easy and certain by the tuberculin test to diagnose a tuberculous cow there should be no difficulty in at least eradicating the disease from dairy cattle. The onus of responsibility of supplying pure milk to the public should not rest on the health authorities, but on the producer, and although the health authority could do a splendid and humane work by providing the public with sterilized milk at a cheap rate, still the real responsibility must be with the man who actually delivered the milk for sale to the public.

Dr. F. W. Eurich, at a meeting of the Bradford Medico-Chirurgical Society, held Feb. 17, brought forward a communication upon the Treatment of Epilepsy, chiefly with reference to the theory that there is in epilepsy an excessive storage of sodium chloride in the body. He detailed a number of cases which had been very successfully treated by comparative privation of salt and its replacement as an article of diet by sodium bromide, about half an ounce of which was taken each week. In one case intermission of the fits had been produced. When the patient began to take salts again freely the fits at once recommenced, but were stopped again when the ingestion of salt was discontinued. Trinitrin in occasional doses was useful in relieving headache.

Dr. R. Hutchinson, at the meeting of the Therapeutical Society, held Feb. 17, 1903, read a paper on the Use of Acid Sodium Phosphate in Alkalinity of the Urine. The alkalinity of the urine was estimated either by precipitating alkaline phosphate by barium chlorides and then estimating the acid phosphates by adding uranic nitrate solution or by adding phenolphthalein and titrating with a standard solution of alkali. He found that mineral acids, even in large doses, had very little effect in rendering the uric acid, nor did organic acids have more than a slight effect, but the acid sodium phosphate had a marked influence on the reaction. It had been tried with very satisfactory results in cases of cystitis and it was found particularly useful after operations on the bladder to keep the urine acid. The dose was from 30 to 60 grains every three hours, but it was best given by dissolving two grams in a pint of water allowing the patient to drink it from time to time. If diarrhea was produced, the drug should be stopped for a short time.

Dr. Fothergill, at the meeting of the North of England Obstetrical and Gynecological Society, held February 20, 1903, recorded a case of Hyperpyrexia associated with Thrombosis of the Vena Cava Inferior. The patient was delivered by a midwife on March 21, 1902. Fever set in and became intensified until patient's removal to a hospital on the fifth day. Improvement followed intra-uterine douching at first, but a relapse occurred on March 31, so the uterus was curetted, several pieces of placenta being removed. On April 6, the temperature reached 111.2° F., but was reduced to 107° F. by hot sponging. Thrombosis of the right femoral vein was quickly followed by involvement of the left, and from this time onward until the patient's death on May 14, there was no special symptom except increasing weakness, though the temperature continued high and remittent, with repeated rigors. There was no sign of suppuration or embolus in any other organ. The immediate cause of death was edema of the lungs. The necropsy showed that the uterus and other pelvic organs were normal; there was no sign of general or pelvic peritonitis; the inferior vena cava and its tributaries were filled with antemortem clot from the heart downward. He was inclined to regard the curetting as the cause of the thrombosis.

## SOCIETY PROCEEDINGS.

### NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

*Stated Meeting, held Thursday, March 19, 1903.*

The President, Andrew H. Smith, M.D., in the Chair.

The scientific business of the evening consisted of a Symposium on Typhoid Fever in Infants and Children.

**Infantile Typhoid Infrequent but Possible.**—This, the first paper of the evening, was read by Dr. J. Lovett Morse, of Boston, Mass., and its subject was the occurrence of fetal and infantile typhoid. He said that when symptoms of continued fever occur in infants and young children at a time when there are other cases of typhoid fever in a family, then typhoid fever must be suspected even in the very young. In a certain number of cases, the disease runs a more or less typical clinical course, but in many others the symptoms are atypical and only a positive Widal reaction makes the diagnosis assured. In 32 cases, observed in Boston, in children under two years of age, 23 gave the Widal reaction, four were diagnosticated by the presence of bacteria in the stools and five by positive Widal and bacteriological tests. It is evident then that careful investigation must be made of all cases of continued fever in very young children, whenever typhoid fever exists in a neighborhood.

**Mortality of Infantile Typhoid.**—Of the patients under observation in Boston 16 died, making a mortality of 50 per cent. This is, of course, much higher than the usual mortality among adults. Dr. Morse does not consider, however, that the average mortality of infants in typhoid fever can be deduced from so few cases, and while it is probable that typhoid fever is more fatal in very young patients, the mortality is probably not more than twice as great as among adults, say from 25 to 30 per cent. of the cases. Death took place in the fatal cases as an average on the eighteenth day. Where the cases were not fatal the average duration of the disease was 29 days. Diarrhea occurred in about 80 per cent. of the cases, and seems to be a much more frequent symptom among children than among adults. In two cases the initial symptoms of the disease seem to be those of meningitis, and the deaths which took place are evidently due to meningeal involvement by the typhoid bacillus.

**Conditions of Typhoid in Children.**—It is evident that the occurrence of typhoid fever in children depends more on their environment than on the question of immunity or protection. Cases of the disease are not seen frequently in Boston or New York, but they are much more frequent in Philadelphia and Chicago. The reason is not far to seek. The opportunities for infection in Philadelphia and Chicago are much more frequent, but if the question of the susceptibility of infants to typhoid is to be determined scientifically, then the study of many more cases by modern diagnostic methods, especially the use of the Widal reaction and of bacteriological auxiliaries, is needed. At the present time it can only be said that while cases of typhoid fever do occur among very young infants, that is, under two years of age, the disease is really infrequent and not only apparently so. Dr. Morse's paper will appear in full in a subsequent issue of the MEDICAL NEWS.

**Fetal Typhoid Fever.**—Dr. J. P. Crozer Griffith, of Philadelphia, said that there are at present in the literature ten cases of fetal typhoid in which the typhoid bacillus was recognized in the blood or the tissues of infants just born of mothers suffering from typhoid fever. This fact serves to show that of themselves very young infants have no natural protection against the disease, but that if placed in circumstances in which infection is liable they suffer from it. In all 23 cases of congenital typhoid, that is, typhoid fever that ran its course after the birth of the infant as a result of infection from a mother suffering from typhoid fever have been reported. Some of these cases were really not typhoid fever, but some other affection, but undoubtedly many of them were true typhoid. Dr. Griffith said that in recent years a manifest change has taken place among the medical profession with regard to the occurrence of typhoid fever in very young children. At a discussion in 1892 the consensus of opinion was that under the age of two years typhoid fever was extremely rare. In 1897 and 1898 this opinion was modified to the extent of admitting the possibility of typhoid occurring oftener than had been thought. In 1900 opposing opinions had been much shaken and infantile typhoid fever was generally admitted to be far less rare than had been supposed. The immunity of infants was evidently very slight and the infrequency of the disease among them was due rather to the absence of opportunity for infection. At the present time there is a growing sentiment that the disease occurs far too often among children to be called rare. Of course, breastfed infants are largely exempt, because of the absence of opportunities for infection and the careful preparation of artificial food with methods of sterilization by heat saved many others from the disease. Of absolute immunity, however, there is evidently little.

**Typhoid Symptoms in Young Children.**—Two sets of symptoms are important in the very young. First nervous symptoms overbalance the intestinal manifestations. Second the fever seldom runs the regular course so usual among adults. Among young children, that is, under ten years of age, walking cases of typhoid fever are quite common. Under two years of age a sudden onset of symptoms is quite frequent. This may take the form of a chill or a vomiting spell, and Dr. Griffith has seen one spell of fatal uncontrollable vomiting. Epistaxis is not so common as among adults. Diarrhea is more or less frequent in different epidemics. This year, out of a large number of cases admitted to the children's hospital in Philadelphia, very few have been without diarrhea. In other epidemics the diarrhea was not marked as a symptom of typhoid fever in young children. In very young children diarrhea is certainly not common. In the fetus no involvement of the intestines has been found in reported cases. The Widal test is extremely important for the diagnosis of typhoid fever in children, because of the anomalous course the affection is likely to run. Dr. Griffith's paper will appear in a subsequent issue of the MEDICAL NEWS.

**Etiology of Typhoid Fever in Children.**—Dr. A. B. Blackader, of Montreal, Canada, said that typhoid fever occurs in children as the result of direct infection of the intestinal tract. The uncleanly habits of children, in respect to what they put in their mouths, are especially responsible for the occurrence of the disease among them. The affection usually develops among the poorer classes, where overcrowding provides opportunities for children's hands to become affected by contact with typhoid fever patients or their excreta. In the household, flies probably play a prominent rôle in carrying infectious material which they deposit on articles of food whence the typhoid bacilli find their way into the digestive tract, even of young children. It is well known that typhoid fever, which is extremely frequent in Tunis, is due to the fact that there is very little provision for the removal of excrementitious material. Notwithstanding opportunities for infection and the lack of precautions, typhoid fever is not, in Dr. Blackader's experience, frequent among very young children, though he does not consider that they can be said to have any special immunity to the disease.

**Typhoid Statistics in Montreal.**—Dr. Blackader has seen some 398 cases of typhoid fever at the Montreal General Hospital. Of these four cases were in patients under five years of age. Eight were below ten years of age, 32 were under fifteen years of age, 80 were under twenty years of age and the great majority of the cases occurred under thirty years of age. There would seem to be a distinctly lessened susceptibility to the disease late in life. On the other hand, the earlier years, that is under ten, do not seem to be as liable to the disease as juvenescence and early adult life. It must not be forgotten, however, that these are hospital statistics and that children are much more likely to be treated at home than are adults, as no mother is able to persuade herself that anyone can take care of her child as well as herself. The histories of the cases of the disease in children seem to indicate that stomach disturbances do not predispose to the occurrence of the affection. A strongly acid stomach would, on the contrary, prevent the development of typhoid bacilli as luxuriantly as would otherwise be the case. It is not unusual for typhoid to run its course with other diseases. Hektoen has recently reported a case in which he found typhoid bacilli in the blood of a sufferer from scarlet fever.

**Special Symptoms in Child Typhoid.**—The temperature course of the disease in Dr. Blackader's experience is not that usually characteristic of typhoid. Goodwillie's steplike rise of temperature, at the beginning so characteristic of the initial stage of adult typhoid, is usually absent. Certain of the supposed special symptoms, however, of child typhoid, are really due to other causes. Special rashes have been reported, but these, in Dr. Blackader's experience, are due to the administration of some drug, as quinine or one of the coal-tar series.

Furfuraceous conditions so often reported from France and other European countries are not usual in this country, probably because of the greater frequency with which full baths are taken. A few small petechial spots do not add to the gravity of the prognosis of typhoid fever in children, but large ecchymoses are an unfavorable sign. Dicrotism of the pulse very rarely occurs in children during typhoid fever. Relapses are less frequent in the early years of life than among adults.

**Diagnosis of Typhoid.**—Dr. L. Emmett Holt said that a certain number of obscure conditions causing fever and a tendency to a restlessness are sometimes spoken of by practitioners as typhoid fever. The conditions most frequently thus misnamed are obscure pneumonia, chronic colitis, obscure nephritis, and certain cases of influenza. Notwithstanding the greatest possible care, a certain number of cases of continued fever in children will escape the best skill and will have to be treated symptomatically, without any absolute diagnosis. The question in the minds of many practitioners is that these cases are typhoid fevers in children frequently overlooked. A certain proportion of practitioners are likely to assume that because a continued fever is not demonstrably anything else, that it may be typhoid fever. Certain it is that typhoid fever is very rare in children. During the present fall and winter, while the wards of the Philadelphia Hospital for children's diseases were so crowded that it was difficult to obtain material for teaching purposes other than typhoid, Dr. Holt has had but one case in his wards in New York. In 14 years of service at the Babies' Hospital, here in New York, Dr. Holt has seen but three cases of typhoid fever under the age of two years and feels justified in concluding that the affection among infants is exceedingly rare in this city. As to conditions in other cities nothing can be said by those who have not experienced them. Good observers as Dr. Griffith, Dr. Blackader, and others have seen typhoid fever at this early age and their observations must be accepted at their full value and as indicative of the fact that under circumstances favorable for infection even very young infants do acquire the disease.

**Presumption Against Typhoid in New York.**—Dr. Holt said in conclusion that in cases of continued fever in New York where the diagnosis is difficult or, for the time, practically impossible the presumption is distinctly against the affection being typhoid in very young children. Of course, the diagnosis can not be made from the clinical symptoms for in children the affection runs an anomalous course very difficult of recognition. The symptoms are much more likely to be cerebral than intestinal. The nervous symptoms are likely to predominate all during the disease. It is important, as Dr. Griffith insists, to suspect certain cases of meningitis of being typhoid fever and, on the other hand, the practitioner must not be surprised to have typhoid fever develop meningeal symptoms in very young children. The beginning of the affection is apt to be more sudden in adults and the skin eruption is likely to be more profuse. Dr. Holt had one case under observation in which practically the whole body was covered by rose spots. This patient was so interesting that the case was seen by many physicians. The diagnosis must depend, in most cases, on the presence or absence of the Widal reaction and the various bacteriological tests.

**Infantile Typhoid in New York.**—Dr. William P. Northrup, in discussing Dr. Griffith's paper, said that there has been no typhoid fever at the New York Foundling Hospital for 25 years, though the children have been under the supervision of such excellent authorities as Dr. J. Lewis Smith and Dr. O'Dwyer for most of the time. It is very evident to his mind that typhoid fever is not only comparatively rare among children but absolutely so infrequent as to be one of the last things to be considered when continued fever of obscure origin in very young children is under consideration. When it is realized how many cases of typhoid there are, for the disease is one of the constant scourges of great city life, it will at once be recognized how extremely rare, even according to these figures, are cases of typhoid fever in very young children.

**Comparative Statistics of Infantile Typhoid.**—According to the last census there were 35,000 deaths from typhoid fever in the United States during the year 1900. Accepting for the moment that the mortality rate of the disease is 17.5 per cent. this would mean that there were 208,000 cases of the disease in the United States during that year. The mortality rate taken is so high that it will easily be understood that this is a very conservative estimate. During that year typhoid fever was not especially epidemic in the United States, so that it was not unfair to assume that the disease prevailed with equal frequency in other years during the last decade. This would mean that there were over 2,000,000 cases of the disease in our country during the last ten years. If we could estimate for the world, supposing the same amount of typhoid existed everywhere, and supposing that we have about one-sixth the population of the earth, which is of course a very high estimate, there have been 12,000,000 cases of typhoid in the last decade throughout the world. As compared with this, we have some 400 cases collected from the literature by Dr. Griffith, who confesses that about 100 of these were probably not typhoid and that there may be a reasonable scepticism with regard to some of the others. It is perfectly allowable then to be sceptical with regard to the occurrence of typhoid among very young children, since, even on the basis of the statistics furnished by those who treat the disease most frequently, the comparative infrequency is clear.

**Typhoid Fever Simulants in Infants.**—The affections which are supposed clinically to resemble typhoid and which are diagnosed as such by many of those who think typhoid fever not rare in infants, are central pneumonia, influenza, malaria, and certain obscure enteric diseases with occasionally nephritis and some of the metabolic diseases, the essential anemias and the like. Grip, central pneumonia and malaria particularly must be carefully eliminated before there can be any thought of typhoid in the case. At the present time, the medical profession is not in a position to discuss the frequency of typhoid fever in children, until further investigation by means of exact methods with the Widal reaction and the bacteriological tests have shown the absolute frequency of the disease. Much time and labor has been wasted over academic discussions up to the present time. Typhoid fever in infants is certainly much rarer than in adults and is absolutely a very infrequent affection, so that it scarcely needs to be thought of in connection with the first two years of life.

**Typhoid Atypical in Children.**—Dr. H. Koplik said that typhoid fever is apt to run a very atypical course in children and that consequently the diagnosis of the disease may easily be missed. Not long ago Professor Koch asked for reports with regard to the possibility of typhoid among children. Special attention was paid to the subject and seven cases were reported. Careful investigation, however, showed that 70 schoolchildren absent from school were really suffering from typhoid fever, though the disease was mostly unrecognized. The majority of these were walking cases, the children's general condition being somewhat disturbed, but not enough to make them keep to their beds. Koch demands for the proper diagnosis of typhoid fever, not only the Widal test, but also the presence of bacteria in the feces. Dr. Koplik does not think that typhoid fever is so rare in New York, among children, as might be considered to be the case from Dr. Holt's recent experience. In Dr. Koplik's service of 30 beds, there have been during the present winter as many as fourteen cases of typhoid fever, in patients from three to fourteen years of age. More could have been admitted if there had been room for them. Dr. Koplik considers that the course of typhoid fever in children is so atypical that the Widal reaction must be depended on for a diagnosis. At times its presence is noted so late in the affection as to make the clinical course of the case very puzzling for absolute diagnosis may be impossible without it.

Dr. Morse, in closing the discussion, said that the type of typhoid fever in children is essentially the same as in adults. With regard to the cases collected from the literature by Dr. Griffith, a careful study of the individual reports seems to show that more than one-half of them were not true typhoid.

Dr. Griffith, in closing the discussion, said that in adult patients, when continued fever occurs for which no other cause is evident, typhoid is suspected. The trend of present thought is toward the conclusion that the same thing may be true in infants, though formerly typhoid fever was the last thing thought of. As a result of the impression that typhoid fever does not occur in infants, Dr. Griffith has been called in consultation in a case where there were typical typhoid fever spots, though the physician had not recognized the disease. Children are protected by their habits of life. but not by nature. It is dangerous then to say in textbooks that typhoid fever practically does not occur in very young children. Dr. J. Lewis Smith, in his textbook of the diseases of children, does not say that the disease is so rare under two years as Dr. Northrup would have us believe.

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## THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting held at the New York Academy of Medicine, March 9, 1903.*

The President, Andrew H. Smith, M.D., in the Chair

**Suprascrotal Operation for Varicocele, with Ligature of the Spermatic Artery.**—The first paper of the evening was by Dr. E. Styles Potter, on this subject. He enumerated the indications for operation as follows: (1) Very large varicocele causing perceptible deformity; (2) pain in the tumor or obstinate reflex neuralgia; (3) aberration of the sexual function; (4) severe and obstinate dermic lesions of the scrotum; (5) interference with the patient's occupation; (6) atrophy of the affected testis; (7) disease of the opposite testis; (8) psychopathic symptoms; (9) desire to enter public service, military, naval or civil; (10) double varicocele, involving danger of serious impairment of the sexual function; (11) varicocele complicating hernia or hydrocele; (12) rapid increase in size. Among the more common of the numerous operations are the following: Excision of the scrotum; compression of the veins by pins and wires; subcutaneous ligature; Ricord's method of tying the veins; Rigaud's method of exposure; excision when the operation is performed through the scrotal tissue.

Of late years the favorite operation has been the open one; excision through the scrotal tissues, excision of the veins, and end-to-end ligature of the stumps. Its disadvantages are mainly in the point of election. Dr. A. E. Bradley, U. S. A., has recently been performing a suprapubic operation. The incision is over the external abdominal ring from the spine of the pubis, as in hernial operations, and is about 2½ inches in length. The veins, having been drawn through the incision with the cord, are separated, ligated and incised. In the operation which Dr. Potter has been doing for the past year, and which he has found to give most satisfactory results, the incision begins at the external abdominal ring and extends downward for about 1½ inches, directly over the course of the cord, and ends just above the scrotal tissue. The tissues are divided down to the cord, and then the cord, vas, artery, nerve and pampiniform plexus of veins are drawn through the incision. The vas and nerve are separated, and the veins, artery and connective tissue ligated above and below. The intervening portion is then removed. The ligatures are left long, and a ligature is passed through the stumps and tied; which brings the two stumps in perfect apposition. Then the remaining long ends of the ligatures are tied, and this brings the point of contact in perfect end-to-end apposition and acts as a natural suspensory for the previously dragging testis. Finally, the cord is returned and the external wound closed.

*Advantages.*—The advantages claimed for this operation are: (1) The incision being above the scrotal tissue, a far neater dissection is possible and there is required less manipulation of the parts, with the resultant dangers of oozing reduced to a minimum. (2) The relations of the parts are more easily discerned, which renders the operation possible in about one-half the time of the open scrotal operation. (3) A better application of the dressings is admitted of than can possibly be obtained in the operation on the scrotum, thereby reducing to a minimum the danger of infection occurring through displacements of the dressings.

As the spermatic artery is deeply situated it seems probable that it is frequently accidentally included in the ligature in the various operations for varicocele, and especially by the subcutaneous method. The spermatic artery furnishing the main blood supply of the testicle, it would seem like rather a hazardous procedure, but the artery of the vas, the great vascularity of the scrotal tissues, and the numerous anastomoses are quite sufficient to keep the testis completely nourished. The ligation of the artery, therefore, becomes the most beneficial step in any operation for varicocele, it being nothing more than reasonable to do this at a time when practically all the veins have been suddenly obliterated. In support of his views in regard to the ligation of the artery, he quoted W. H. Bennett in his monograph on varicocele. True atrophy of the testicle following operation is a very rare condition. The testis is likely to diminish in size immediately after the operation, but this is owing to the fact that a large part of the previous bulk was due to the enlarged veins. This apparent atrophy, however, is only temporary, and is followed by a return of the testis to the natural size. Dr. Potter has performed his operation in nine cases, and three of these he narrated.

**Ligature of the Artery Advisable.**—Dr. W. B. De Garmo said he was a believer in suprascrotal operations. Personally he had been doing them for many years, and he thought he was the pioneer in operating for varicocele through the hernial incision, a point still higher than that selected by Dr. Potter. He had done the Bennett operation chiefly, and he had been in the habit of carefully avoiding the spermatic artery. He was convinced, however, that Dr. Potter was right in ligating it, and said he would adopt that measure in the future. In one case of his own he had included the artery unintentionally. He had watched the patient with great interest, as he felt somewhat anxious about the result; but two years had now elapsed since the operation, and there had been no atrophy of the testicle.

**The Results of Operation not Always Good.**—Dr. R. Guiteras said that the results of operations were not always satisfactory. Very often there is left a neuralgic condition of the testis, which had not been previously present. In some instances, however, such a neuralgic condition existed before the operation, and is not removed by it. When it comes on as a result of the operation, the attempt may be made to remedy it by opening the wound again and breaking up the adhesions formed. Sometimes this is successful, and sometimes not, and he referred to one case which was operated on several times by himself and other surgeons, without securing a satisfactory result. In his experience he remembered three suppurative cases. Chromicized catgut was probably the best material for ligature, but care should be taken that it was not of too large size, as it was then apt to cause irritation. This seemed to be the trouble in one of the cases mentioned, and it was nearly two months before he succeeded in removing a piece of ligature which had become exactly like a wire. In one case gangrene of the testis occurred, necessitating its removal.

**Perforated Gastric and Duodenal Ulcers.**—This was the title of a paper by Dr. A. A. Berg, who said they depended upon two factors, (1) the rapidity with which the ulcerative process extends through the walls of the stomach or duodenum, and (2) the site of the ulcer. It is evident that when the ulceration spreads rapidly through the coats of the viscus, adhesive barriers with neighboring organs will be less likely to form, and extravasation of the contents will probably take place at the time of perforation. The situation of the ulcer determines the character, extent and site of the lesions following upon its perforation, and the location of the extravasation affords at once, upon opening the abdominal cavity, information as to the probable site of the ulcer—an important time-saving consideration. When extravasation occurs into the free peritoneal cavity, septic peritonitis ensues, the extent of this depending on the time that has elapsed before operative interference. It is well to remember in this connection that the transverse colon and the mesocolon may, and usually do, for a number of hours limit the extravasation to the upper half of the peritoneal cavity; but eventually the intestinal contents make their way to its lower part. This natural limitation of the extravasation for a number of hours affords better prognosis from early operation than is the case with perforating ulcers situated lower down the alimentary canal. It is also worthy of note that the peritonitis caused by the extravasation of gastric or duodenal contents is likely to be of less virulent character. When the extravasation is into the retroduodenal cellular tissue, it there gives rise to abscess-formation which spreads downward behind the ascending colon, even into the pelvis and around the kidney, and which tends to evacuation into some neighboring cavity or viscus. The lesions of neighboring viscera, such as the liver, pancreas, etc., which by adhesion to the floor of a slowly advancing ulceration had prevented extravasation, but by continuity had themselves become involved in the ulcerative process, were also of much importance, but could not now be considered.

**Symptomatology.**—The ulcer may have been a latent one, so that the perforation furnishes the first indication of its existence. Especially is this the case in duodenal ulcers. Or, it may have given rise to the usual train of symptoms; in which case the perforation may occur during its ordinary course or suddenly during a period of exacerbation. At the time of perforation there is generally a severe tearing pain in the epigastric or right hypochondriac region, which may or may not be accompanied with prostration and collapse.

Locally, the upper half of the abdominal wall is rigid, and does not participate in respiratory movements. There are distinct epigastric pain and tenderness, and more or less tumefaction may possibly be present. Liver flatness on superficial percussion may or may not be obliterated; a tympanitic percussion note indicating that a considerable amount of gas has escaped into the abdominal cavity. Vomiting and hematemesis may occur. Hyperleucocytosis at the time of perforation has not been observed in the reported cases. Several hours after perforation the signs of septic peritonitis supervene, and obscure all the other symptoms. During this later period also the liver dulness on percussion varies in different cases. If the perforation is in the posterior wall of the duodenum, the patient goes on to develop a retroperitoneal abscess on the right side of the abdomen.

**When to Operate.**—As regards this question the cases may be roughly divided into two groups: (1) Those presenting the symptoms of perforation and extravasation into the free peritoneal cavity, and (2) those in which there are evidences of perforation, but no obliteration of hepatic or splenic dulness. Dr. Berg's experience has convinced him that when such dulness is normal, the extravasation is always localized by adhesions of the ruptured viscus to neighboring parts. In the first class of cases, broadly speaking, the operation should be done as soon as a diagnosis is established. In the second, though the urgency is not so great as in the other, there is very little doubt that laparotomy should be performed, and the perforation closed if possible. It may be advisable in some of these cases to wait a few days in order to permit firm adhesions to form around the local extravasation, but operative interference should not be too long delayed. As to shock influencing the time for operation, the depression of the central nervous system is due to the extravasation, and the surest way to relieve it is to prevent further contamination of the peritoneum. Vigorous hypodermic stimulation and subcutaneous infusion will usually suffice to temporarily counteract the shock, and enable the surgeon to proceed with immediate operation.

**Operative Treatment.**—(1) *Ruptured ulcers on the anterior wall of the stomach or duodenum.* Excision of the necrotic edges or excision of the entire ulcer, followed by closure of the defect by suture, has not yielded as satisfactory results as simple inversion by suture of the ulcer into the lumen of the viscus. In the case of the duodenum the infolding of the wall required for this may so materially narrow the lumen as to necessitate its exclusion by gastro-enterostomy. It has been Dr. Berg's experience that a reduction of the diameter of the lumen of any part of the small intestine to one-half the normal does not result in any marked interference with the passage of contents through it. For the inversion of the ulcer a double row of Lembert mattrass sutures of silk or catgut is passed through healthy tissue at the margin of the ulcer. The site of suture should always be covered by omentum or a strip of cargile membrane, and then protected by a narrow wick of gauze. When extensive infiltration and brittleness of the tissues surrounding the ulcer cause the sutures to tear out, the ulcerated area may be attached to the anterior parieties, or the perforation may be tamponed with gauze. In either case a jejunostomy, by which to administer nourishment, must be established. The peritoneal surfaces and cavity are carefully cleansed of all extravasated material and exudate by gently mopping with soft sea-sponges or sterile gauze. It is his practice not to drain the peritoneal cavity. Such drainage, he believes, does little good, and may lead to secondary infection.

(2) *Ruptured ulcers on the posterior wall of the stomach or duodenum.*—As to the gastric cases, the exudate in the postgastric space is first of all removed by aspiration through the gastrohepatic omentum. To determine the position of the ulcer the finger is introduced into the postgastric space through the foramen of Winslow. If it is near the lesser curvature, access to it will best be gained through the gastrohepatic omentum; if it is near the greater curvature, it will be more easily reached from below, through the transverse mesocolon. During the manipulation the general peritoneal cavity is protected by gauze compresses. When possible, the ulcer is inverted by Lembert mattrass sutures; drainage of the postgastric space being provided through a stab wound in the back. When it is impossible to close the perforation, the opening is packed by gauze passing out to the surface through a stab wound in the back, and a jejunostomy established for feeding the patient.

In ruptured ulcers on the posterior duodenal wall, in view of the fact that in the adult the duodenal surface is uncovered by peritoneum, it is almost useless to attempt repair of the perforation *per se.* The sutures will either not hold in the necrotic tissues or through secondary infection will give way; in any event, a duodenal fistula is very apt to follow. In order to avoid this (which always results in speedy death from starvation) Dr. Berg would advise, in cases where the diagnosis is made before operation, that the extravasated material and purulent exudate in the retroduodenal, retrocolic, and perinephritic spaces be drained through a lumbar incision, and the orifice of the ruptured ulcer tamponed with gauze. The abdomen should then be opened, a gastrojejunostomy established, and the pylorus constricted with a purse-string silk suture. The perforated duodenum is thus unilaterally excluded from the intestinal circuit, and leakage of the chyme through the fistula prevented. This procedure is better than a jejunostomy, for gastric digestion is not done away with by it. The duodenal rupture must necessarily close spontaneously, as there is nothing to leak out and keep it open. He had intended doing this operation in his case of ruptured ulcer on the posterior duodenal wall (Case 3), but the wretched condition of the patient forbade any secondary operation. In those cases in which the diagnosis is not made until the abdomen is opened, the exudate is evacuated by incising the peritoneum on the outer side of the colon, and drainage established through a stab wound in the back. Gastroenterostomy and pyloric constriction are then at once performed.

Dr. Berg described four cases which were all operated upon by him at Mount Sinai Hospital.

**Importance of an Early Diagnosis.**—Dr. H. W. Berg said that the success or want of success in operating depended largely on the earliness of the diagnosis, which must be based on clinical data. It had been his own experience, and that of others, that the cases of perforation in typhoid fever had been unusually numerous during the past season. In making the diagnosis, he said, instead of relying upon shock and pain, as had been the old style, we had now come to place confidence on the rapid increase of leucocytes, and the more or less complete disappearance of hepatic and splenic dulness. The leucocyte count is of more significance in typhoid perforation than in others, because in typhoid fever the number of leucocytes is naturally very low, and any marked increase in the count at once leads to the suspicion of perforation. In one of his cases the patient was operated on in six hours, and in another in three hours after the diagnosis had been definitely made.

## HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

*Regular Monthly Meeting, held Saturday, Feb. 28, 1903.*

Palmer C. Cole, M.D., Temporary Chairman, in the Chair.

**Innocent Syphilis and Palate Perforation.**—Dr. Follen Cabot presented a patient suffering from extensive perforation of the palate with complete exulceration of the vomer and of most of the intranasal tissues. The patient is an Italian forty-nine years of age, who came to this country seven or eight years ago and who stopped at a boarding-house where one of his companions suffered from a severe rash and a sore throat. The patient developed a sore on the lip that took a long time to heal and that was followed by some secondary symptoms in the shape of a rash with some soreness of the throat but nothing very bothersome.

**Family Transmission.**—The patient is a married man and has two perfectly healthy children who were born in Italy. He was not exposed in any other way, so there is reason to think that the chancre was innocent. Since his wife has come to America, about a year after he had the sore on his lip, there were four miscarriages. A child at present living and about three years of age seems to be in good health. The wife does not seem to have suffered from any external symptoms of the syphilis, and this latest child shows no signs of the disease and does not seem as an infant to have suffered from the affection. There is therefore a complete history of syphilis which has run out as regards hereditary conveyance, yet is proving intensely virulent for the patient himself.

**Present Ailment.**—About twenty months ago the patient developed a sore in the upper part of his mouth. The palatal tissues very soon began to disappear. He began also to suffer from pain in the head much worse at night and from severe pains in his bones, especially in the shin, with an ulcer of the shin-bone. He put himself under treatment, and at first the character of the malady was not recognized, but later he was given antisyphilitic treatment. For some unexplained reason this did not afford any relief to his symptoms and he was treated by other physicians, all of whom recognized the syphilitic nature of the malady but none of whom seemed to direct their treatment properly so as to stop the ulcerative process.

**Mixed Treatment.**—About two months ago he came under Dr. Cabot's treatment with an immense hole in the roof of his mouth, showing angry gangrenous patches and an intense fetor. The vomer had already completely disappeared and the interior of the nose had been entirely eaten out with some portions of the ethmoid and other bones in the nasal region. He had lost greatly in weight, was unable to work, had no appetite and had great difficulty in chewing and swallowing his food and was very much disturbed. He was at once placed upon mixed treatment, potassium iodide 25 grains three times a day, gradually increased, and bichloride of mercury, $^1/_{20}$ of a grain, also increased. At the present time he is taking one hundred grains of potassium iodide three times a day and ⅛ of a grain of bichloride of mercury three times a day. Neither of the remedies has had any unpleasant complicating effects. He has not suffered from a single pimple, notwithstanding the amount of iodide he is taking and the bichloride has not disturbed his bowels, or interfered with his appetite, or given any trouble in his mouth.

**Results of Treatment.**—Within a week after mixed treatment was instituted the headaches disappeared, and he no longer had pains in his bones. The angry gangrenous look began to disappear at the edges of the sloughing ulceration in the mouth and healthy granulation tissue began to make its appearance. At the present time the cavity has decreased in size somewhat, though, of course, there will remain a large opening between the nose and the mouth. His general condition began to improve at once. With the improvement in the sore in his mouth he could eat better and enjoy his food. In the last ten weeks he has gained twenty pounds in weight. He is able to work now, does not feel discouraged, suffers from no pain and sleeps well at night. His ulcerative process was very much improved by local applications of peroxide of hydrogen, and this proved to be the only local treatment that was needed.

**Prothetic Apparatus.**—The only thing necessary now to make him reasonably comfortable is a prothetic apparatus in order to close the large opening between the mouth and the nose, and the edges of the cavity look healthy enough now to stand the fitting in of such an apparatus. Owing to the immense loss of tissues in the front part of the mouth, the front teeth have become quite loose and these also can probably be fixed in place by means of a dental plate. Dentists are able to do this sort of thing very effectively now, each case requiring special study, however, to meet the mechanical defects required in it, and there seems no reason to doubt that except for the saddle-back nose, due to the disappearance of the intranasal tissues, the patient can be made very comfortable and even reasonably presentable in appearance.

**Tuberculosis of Bladder.**—Dr. J. N. Spooner presented for Dr. Cabot a case of tuberculosis of the bladder demonstrating the very curious trabecular arrangement of the muscular fibers of the bladder, due partly to overgrowth and partly to chronic inflammation, that is sometimes seen in these cases. The patient was a man of sixty with a good family history, except that one brother died of phthisis. He suffered for some twelve to fourteen years with a recurrent swelling of the scrotum, evidently a hydrocele, which required to be tapped at intervals. About a year ago, after having been tapped, the hydrocele did not recur. The patient does not know whether it was injected with some irritating material at that time in order to secure its non-recurrence or not. Not long after the last tapping of the hydrocele swellings began to appear in the joint groin. These spread until they involved the whole chain of inguinal glands. The glands were removed by Dr. Fuller and healing took place without complication and without delay.

**Present Condition.**—The man has some swelling of the testicles and examination shows that his seminal vesicles are chronically inflamed and tender. He has to get up two or three times at night to make his water, but ordinarily has no difficulty in urination and is not especially troubled during the day. It seems probable that his present condition is due to tuberculosis.. There may have been a focus of the disease in one of the testicles, running a latent course until the chronic adhesive inflammation set up by the injection of the irritant into the hydrocele tract caused it to light up. This tuberculous process has spread to the inguinal glands and to the seminal vesicles. A cystoscopic examination of his bladder shows the presence of the trabeculated arrangement that has sometimes been seen in these cases, and illustrations of which appear in some of the German text-books on genito-urinary diseases. The trabeculæ in the bladder are easy to see with an ordinary cystoscope, and there are suspicious appearances between them that point to some tuberculous ulceration of the mucous membrane of the bladder wall.

**Treatment.**—As far as possible, the man's general health will be improved, his bowels will be watched carefully and all tendency to constipation will be overcome. His urine will be kept as unirritating as possible, and he will be advised to pass most of his time in the open air. The case is not as hopeless as it would seem, and will be reported again. The demonstration of the case became impossible, owing to the occurrence of spasm of the urethra, that prevented the insertion of the cystoscope.

**Meckel's Diverticulum.**—Dr. Frederick R. Wilson presented a specimen of Meckel's diverticulum which had been removed from a patient operated in the Post-Graduate Hospital in the summer of 1900 because of symptoms of intestinal obstruction. Before having been shriveled up by immersion in alcohol, this specimen was over an inch long and had been a real blind sac connecting with the gut which had acquired adhesions to another portion of the intestines, causing complete obstruction of the circulation in this region of the intestines with resultant gangrene.

**History of Cases.**—Ruysch, in 1701, was the first one to demonstrate the possibility of the existence of a diverticulum of the intestine and toward the end of the century, Morgagni showed that its presence was not as unusual as had been thought, and that the structure was the remains of the vitelline duct of the fetus. At the beginning of the nineteenth century he showed the embryological process by which the vitelline sac was gradually transformed into a small pouch and then obliterated in the process of development. He showed that when the vitelline ducts persisted and formed the blind pouch of the intestines, they have all the coats of that viscus, the mucous, serous and muscular. He showed that about the fourth week of fetal life the yolk sac was at full size, somewhat pear-shaped and supplying all the nourishment for the fetus. At the fifth week retrogression begins, and after this fetal nutrition comes from the mother. The vitelline sac remains visible, however, until the third month. During this time the sac is entirely outside of the body. Only the neck remains within the fetal abdomen, and this becomes obliterated, leaving no connection between the sac and the intestines. This is the formal process, at times, however, fatty degeneration fails to take place, and then Meckel's diverticulum exists to become a source of pathological conditions of various kinds.

**Pathology at Various Ages.**—If the diverticulum exists in newborn children, it usually occurs about twelve inches above the ileocecal valve. If it occurs in later life, its origin from the intestines may be four feet away from the cecum. The vessels may form a band that runs between the umbilicus and the gut, and the result of the persistence of this fibrous cord may prove a source of intestinal obstruction. Most of the diverticula present in these cases are attached to the umbilicus. A few, however, have attachments to the mesentery. Attachments to the umbilicus are a little more dangerous than the others, since more opportunity is allowed for imprisoning portions of the intestines and so interfering with their circulation and causing extensive gangrenous and inflammatory processes.

**Frequency of the Persistence of Diverticula.**—Meckel's diverticula are present in 1½ to 2½ per cent. of all bodies. In 2,400 bodies examined at St. Bartholomew's Hospital, in order to determine this point, Meckel's diverticulum was found in 27 cases. German and French statistics, however, give a higher per cent. than this. The proportion of intestinal obstruction cases that are due to the persistence of Meckel's diverticulum is greater than has been thought. At least six per cent., and perhaps ten per cent., of all cases of obstruction are due to this cause.

**Varieties of Pathological Conditions Caused.**—Meckel's diverticulum may cause all manner of intestinal obstructive symptoms. On it as a main factor may depend the occurrence of intussusception. The diverticulum itself becomes invaginated in the portion of intestine to which it is attached, and by causing interference with peristaltic movement one portion of gut becomes forced over the other or the paralytic portion becomes invaginated in the part just above it. Meckel's diverticulum has also been found in volvulus of the intestine. At times fecal matter may find its way into Meckel's diverticulum and while delayed there may, as in the case of the appendix, set up inflammatory symptoms with pus production, leading to perforation and, of course, peritonitis. The most frequent form of pathological condition associated with Meckel's diverticulum, however, is its acquisition of adhesions to other portions of intestine and its production of obstruction to the circulation of the small intestine with the well-known symptoms.

**Diagnosis of Intestinal Obstruction.**—Halsted, in an article on intestinal obstruction, says that, if possible, the variety of obstruction should be diagnosed as the prognosis, and the probable course of the case is not a little influenced by this consideration. As a rule, however, the best advice for obstruction cases is to operate as soon as possible after the diagnosis of obstruction. The less the delay, the more chance for the patient. Even a few hours will make a very serious difference in the prognosis of the case after operation.

**Prognosis of Obstruction from Meckel's Diverticulum.**—The prognosis of intestinal obstruction due to Meckel's diverticulum is worse than that due to other causes. As a rule this has been set down to the fact that surgeons sometimes divide the band which causes constriction of the intestine without examining what sort of a structure it is and without ligating the cut ends. As Meckel's diverticulum presents as a rule a free opening into the intestine, this leads to leakage of the intestinal contents and, necessarily, to peritonitis and death. Unless it has been definitely decided that the constricting band is composed only of connective tissues, it is criminal to leave the ends of it untied in such cases. The surgeon must decide for himself what the structure is, or else he must take the precaution to tie both ends of it and in the meantime allow no escape of suspicious material into the peritoneal cavity.

**Present Case.**—The patient was a boy of three years of age, born in Austria, but two years in this country, with no history of previous attacks or of suspicious symptoms of any interference with the circulation of the intestines. When admitted to the hospital he had been suffering from the condition for three days. He got up in the morning perfectly well, ate his breakfast with a relish and some time afterward began to suffer from pain. In the afternoon vomiting set in. An enema proved effectual, but the symptoms subsided only for a very short time, did not disappear completely, and then began to grow worse again. The vomiting particularly continued and became offensive. During the night fecal vomiting set in, and as another enema gave no relief from symptoms, and the child continued to be in collapse, gradually growing worse, it was brought to the hospital on the third day.

**Condition on Admission.**—The abdomen was moderately tender, and there was a tumor in the right side, somewhat below the umbilicus and extending over into the right iliac fossa. There was very little temperature, but a weak and rapid pulse. The patient was pale, with a pinched and anxious face and the signs of collapse due to some severe abdominal affection. No peristaltic waves could be seen on the abdomen, nor could the outlines of the intestines be made out. There was very little to suggest intestinal obstruction, except the fecal vomiting. Accordingly, the diagnosis was left undecided between some form of intestinal obstruction and appendicitis.

**Operation.**—When the abdomen was opened, some distended injected coils of intestine immediately appeared in the wound. Some of the coils of intestine were adherent to each other, and after a short time the obstructed portion was found and it was noted that gangrene had already begun. The gangrenous portion was resected, the patient was stimulated by amounts of hot saline solution poured into the abdomen, several quarts of which was allowed to remain when the abdominal wound was closed, but reaction did not take place, and the patient died some three hours after the operation.

In answer to a question, Dr. Wilson said that the pain was more localized in the right iliac region than anywhere else, but was much more diffuse than is usually the case in appendicitis. In cases of intestinal obstruction pain is always more complained of at first than later on. As a rule the pain of intestinal obstruction is apt to occur at the level of the umbilicus, or in the upper quadrants of the abdomen rather than in the lower.

**Papilloma of Bladder.**—Dr. Follen Cabot presented a specimen of tumor that had been passed by a patient who has been suffering for over a year from an occasional slight amount of blood in his urine. The man has a good family history and never had any previous difficulty in his urinary tract. Fifteen months ago he noted a little blood at the end of urination. This recurred after several weeks, but was not large in amount and produced no special inconvenience. About three months ago blood began to appear after urination quite frequently, at least three or four times a week. There was never any pain associated with it. Occasionally during the last few months portions of filamentous tissues have appeared in the urine. These are evidently the finger-like projections of a villous growth of the mucous membrane of the bladder.

**Cystoscopic Examination.**—It was not hard to make a cystoscopic examination, though the bladder had to be washed out rather carefully in order to secure a field free from blood, as the irritation caused considerable bleeding from the tumor. The papillomatous growth of the bladder wall was found situated near the neck of the bladder and involving somewhat the trigone. So far there have been no general symptoms. The bleeding is not sufficient to cause any anemia, and the question that occurred is whether operation for the radical removal of the tumor should be recommended or not. Up to this time at least it has no tendency to malignancy, as seems clear from the fact that no constitutional symptoms have occurred. Operation in these cases is not easy and cannot always be depended on to give a radical cure. Dr. Cabot saw a patient at the Presbyterian Hospital with a history of having had some symptoms of the presence of such a growth for twenty years. Finally, because of the amount of bleeding, operation was done. Some months after the operation, however, the bleeding became even more alarming than before, and then the man lost weight and became cachectic and, as the result of malignant degeneration, a fatal issue ensued. In this case operation seemed to have hastened the conversion of a benignant tumor into a malignant growth.

Dr. Spooner said that a patient with a tumor of this kind had been under observation for 25 years at the dispensary at the Massachusetts General Hospital in Boston. While considerable bleeding had taken place no other serious symptom had developed. It seems advisable, in these cases, to wait until some urgent symptoms develop before undertaking extensive radical operation.

**Small Tumor, Immense Hemorrhage.**—Dr. Ramon Guiteras related the case of a patient who came under his observation about a year ago. The patient was suffering from some hematuria and pyuria, which he attributed to an attack of gonorrhea he suffered from the year before. This had been complicated by an attack of epididymitis. Eight months before the patient came under observation he noticed a little blood in his urine, or rather just after the end of urination. At the end of about a week this occurred again. Then it began to occur more frequently and finally became quite profuse and occurred after every urination. When the urine was allowed to stand, there was a layer of clear urine above, then a whitish sediment, and then a red sediment, evidently due to the blood below. There were no casts present in the urine and the cellular elements found after centrifugation were typical bladder epithelium and an absence of kidney elements.

**Cystoscopic Examination Negative.**—When a cystoscopic examination was undertaken it was a long time before the field of vision could be made clear, there being a constant tendency for it to become obscured in the presence of blood. Eventually the trigone was found to be clear, but a good view of the rest of the bladder could not be obtained even after many trials. It seemed almost sure that the patient was suffering from a tumor of the bladder, and as the hemorrhages had been very severe so that the patient was almost exsanguinated, it was thought that the tumor must be large. Operation was therefore advised and was accepted by the patient and the family physician as the only recourse under the circumstances, if the patient's general health was not to suffer seriously from the loss of blood. For the same reason delay in the operation was advised against.

**Extremely Small Tumor.**—A suprapubic cystotomy was performed, and when the bladder was opened there was a gush of blood. After careful hemostatic precautions, this was stopped. The most careful examination of the interior of the bladder failed to show any tumor, and as the family physician was leaning over the operator's shoulder it was a rather embarrassing moment. The urine from the kidneys on both sides was seen to be perfectly clear, so that there could be no thought of renal hematuria and pyuria to explain the blood after urination. Directly in the line of incision into the bladder tissues, a small portion on each side, was a minute tab of tissue that had been divided by the incision. This seemed to be of the character of an angioma when looked at carefully. It was removed, and its base thoroughly cauterized. It had been larger when the incision was freshly made, but was shriveled up by the hot water applied in order to stop the first gush of bleeding. The wound was sewed up, the man recovered without complications, and no further bleeding was reported. It was a surprise to the operator himself to think that so small a tumor should have occasioned such severe hemorrhage.

**Vesical Papilloma.**—A patient, recently under Dr. Guiteras' observation, a native of Costa Rica, had suffered for eleven years with occasional hemorrhages. Three months ago he had a severe bleeding from the bladder, which only ceased after the injection of a solution of adrenalin. Since then there have been tendencies to profuse hemorrhages at times. The patient has had no other inconvenience, no pain, no tenderness. Cystoscopic examination showed the presence of a papillomatous growth of the bladder with finger-like projections. A number of these projections showed little red points, evidently the congested areas from which bleeding occasionally took place.

**Fibrosis of Bladder.**—Dr. Follen Cabot said that in a certain number of reported cases, even though there has been true tumor, intense hemorrhages from the bladder have been reported, and then a condition of fibrotic change of the mucous membrane has been found. This, after being scraped out and cauterized, fails to be the seat of hemorrhage as before, though the operation itself is apt to be accompanied by very severe bleeding. Certainly the size of the tumor has nothing to do with the amount of bleeding that may occur. Large tumors may give rise to very little bleeding and small tumors may cause sufficient bleeding to exsanguinate the patient.

## BOOK REVIEWS.

Transactions of the American Gynecological Society. Volume 27, For the Year 1902. Wm. J. Dornan, Printer. Philadelphia.

The usual most excellent array of papers is to be found in this, the twenty-seventh volume of the transactions of this society. The year has brought forth a keener appreciation of the various problems that have confronted the gynecologist in the past, and many new ideas are brought forward to meet these emergencies.

The Alexander operation for retrodisplacement of the uterus finds a most ardent supporter in the person of Dr. Clement Cleveland and he seems to find but few limitations to its use. The classic objections to it are very cleverly set aside by him and one is almost convinced that he alone is in the right. This author condemns the operation on the round ligaments through the vagina in unmarried women.

Dr. J. Riddle Goffe, the leading exponent of the vaginal operation for the shortening of the round ligament has a most excellent paper on the uniform good results that he is able to obtain by this method of procedure in the same condition.

Dr. Robert A. Murray of New York is an ardent advocate of Cesarean section in almost all cases of placenta previa, regarding it preferable to version and other methods, as celiotomy has now reached that degree of safety that it can almost be performed with impunity.

A paper of much interest was read by Dr. Reuben Peterson, on Ovarian Fibromata, being a critical review of eighty-four cases selected from recent literature. Dr. Philander A. Harris shows a very clever method whereby old suppurating wounds of the abdominal walls may be resutured. Dr. Geo. A. Noble, of Atlanta, Ga., advances a new operation for the repair of complete tears of the perineum, designed for the purpose of eliminating danger of infection from the rectum. Many other excellent papers are included in the book, but space does not permit of a review of their nature.

At the end of the volume is appended a memorial tribute to Dr. Paul F. Mundé. This is written by Dr. Matthew D. Mann, of Buffalo, N. Y.

The Practical Medicine Series of Year Books. Vol. III, the Eye, Ear, Nose and Throat, Edited by Casey A. Wood, C.M., M.D., Albert H. Andrews, M.D., T. Melville Hardie, A.M., M.D., December, 1902. The Year Book Publishers, Chicago.

This volume of the Practical Medicine Year Books maintains the reputation of previous numbers of the series. It contains an excellent review of the recent literature of the special subjects of the eye, ear, nose and throat; the names of the editors being sufficient guarantee that the work is well done. In the chapters on the eye, the subjects of toxic amblyopia and of the affections of the ocular muscles are especially well treated. Under the ear the affections of the middle ear and of mastoid disease contain many practical points, most of them recent and suggestive of practical value. This series of books is making a distinct place for itself in present-day medicine.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden, Senior Physician to the City Hospital in Frankfurt a. M. Authorized American Edition. Part I, Obesity. The Indications for Reduction Cures. E. B. Treat & Co., New York.

Professor von Noorden is so distinguished an authority with regard to disturbances of metabolism and nutrition as to make it needless to say that this book is the last word on an interesting subject. Even Professor von Noorden, however, confesses how difficult the matter of reduction becomes in certain cases. He refers particularly to the tendency in women to the accumulation of fat in the abdominal walls and in the mesentery and how easy it is for a reduction cure to affect the fat in all other parts of the body and leave this more or less undisturbed. Of course the main object of taking the cure in most cases is the reduction of the girth of the abdomen. The book is well worth the reading and is commended to specialists in the subject.

The Practical Medicine Series of Year Books. Vol. II, General Surgery. Edited by John B. Murphy, M.D., Professor of Surgery, Northwestern University Medical School, November, 1902. The Year Book Publishers, Chicago.

The present volume of the Practical Medicine Series of Year Books, in response to the request from many sources, is much larger than the usual volumes, containing some 550 pages, with an excellent index. The enlargement is in response to requests for more detailed reviews of the articles presented and this volume in most respects may be said to make unnecessary the reading of an immense amount of literature, much of it in foreign languages. Dr. Murphy, in the introduction to the book, insists very much on the danger of delay in serious surgical cases. He suggests that middle meningeal hemorrhages are not treated until their permanent or fatal damage is accomplished. Peritonitis is still unoperated until fatal desquamation, or blistering of the peritoneum has taken place. He asks very pertinently, When will the medical profession realize that the loss of a life by omission is as grave as the loss of a life by commission?

Books like the present one are apt to keep the general practitioner up to date, so that he realizes the possibilities of danger in cases that might otherwise seem to admit of delay. The chapters with regard to the intra-abdominal diseases are especially informing in this respect, and of these, as might be expected under Dr. Murphy's direction, the important and progressive chapter of the diseases of the liver and gall-bladder is particularly commendable.

Guy's Hospital Reports. Edited by J. H. Bryant, M.D., and F. J. Steward, M.S. Being Vol. XLII of the Third Series. J. & A. Churchill, London.

Guy's Hospital Reports always contain some characteristically interesting and practical material. Some of the valuable articles this time are on the Pathology of Acute Rheumatoid Arthritis, by Dr. W. Hale White, who describes three forms of this disease; A Research upon the Metabolism of a Patient Suffering from Diabetes and Syphilis, following upon Fracture of the Skull, by Drs. Butler and French, and papers On The Importance of Strong Abdominal Muscles, on the Gelatin Treatment of Aneurism, and on Heat Stroke, with a supplementary paper on the effect of Muscular Work upon the Temperature of Man. All of these papers have a certain clinical value and the original work involved is of a high order. Americans working along related lines must consult the book if they do not care to run the risk of missing very suggestive material.

THE INTERNATIONAL TEXT-BOOK OF SURGERY. By British and American authors. Edited by J. COLLINS WARREN, M.D., LL.D., Hon.F.R.C.S.,Eng.; Professor of Surgery in Harvard Medical School; Surgeon to the Massachusetts General Hospital, and A. PEARCE GOULD, M.S., F.R.C.S., Surgeon to Middlesex Hospital; Lecturer on Surgery, Middlesex Hospital Medical School; Second Edition. Vol. I. General and Operative Surgery. Vol. II. Regional Surgery. W. B. Saunders & Company, Philadelphia and London.

THE prompt appearance of a second edition of this work vouches for a degree of popularity which it requires only a cursory examination of the volume to understand. The junction of American and British editors serves to give the work truly an international stamp and the eminence of the contributors selected by them places the value of their writings beyond peradventure. When such names as those of Abbe, Bull, McBurney, McCosh, Warren, Gould, Cheyne and Mayo Robson, to mention a few, are found on the title page no great argument is necessary to establish the excellence of a treatise so sponsored, and this will no doubt remain a standard reference and text-book for years to come. While books on the subject of surgery are per se more apt to require frequent revisions than those on other branches of the art owing to the constant advances made, the last few years have been especially productive of new material, for the Spanish American and South African wars have afforded many opportunities for the practical demonstration of what had previously been more or less theoretical. The results of these have all been incorporated in this edition and the use of the Roentgen ray, the effect on the human body of various kinds of bullets, the results of surgery in the field and many other matters pertaining to military and naval surgery are all treated in the light of the experience gained in the events of the immediate past and the selections on these topics will be found among the most interesting in the book.

The plan of the work is too much like that of most text-books to require especial comment, but the various sections have been assigned to authors whose experience renders their writings instructive to a degree never to be approached in a "one-man book." The chapters on bacteriology and the blood are particularly useful as well as the one on anesthesia in which the latest apparatus. such as the Bennett gas and ether inhaler and Fillebrown's inhaler for nose and throat work are described. Other sections that show the modernness of the work are those on phototherapy, the Roentgen ray and Roentgen-ray dermatitis. The dry operation for the reduction of congenital dislocation of the hip according to the methods of Lorenz is well described, though we have not been able to find any mention of Stimson's method of reducing traumatic dislocations by the continuous pull of heavy weights. A chapter of especial interest is that devoted to the "Influence of Age and Race in Surgical Affections," in which, among others, the popular belief in the immunity of the negress to ovarian cyst is shown to be erroneous. Another section to which present developments give an added value is that on "Surgery and Surgical Operations in the Tropics," in which the diseases to be encountered and the conditions under which work must be done in our new possessions are discussed.

The illustrations throughout are of the highest order and apparently, without exception, are original, so that the conventional figures which have done duty since the days of Gross and Ashurst are conspicuous by their absence. Indeed, so distinctive is the mechanical make-up of the volumes that the International Textbook may be said to have set a new standard in the production of medical books.

DIRECTIONS FOR LABORATORY WORK AND PHYSIOLOGICAL CHEMISTRY. By HOLMES C. JACKSON, Ph.D., Instructor in Physiological Chemistry in the University and Bellevue Hospital Medical College. John Wiley & Sons, New York.

THIS book is intended as a guide to students of physiological chemistry. As such it is, we believe, exceedingly well adapted to the work in hand. The experiments have been chosen with good judgment and are well adapted to the bringing out of the essentials that every medical student should have as a foundation for his work in the subsequent study of the perverted metabolism of the human body seen as a practitioner.

While such works often seem unnecessary to the general book reviewer, we believe that they serve a very useful function if they have been constructed with due attention as has the volume under consideration to the future needs of the future medical practitioner.

INORGANIC CHEMISTRY SYLLABUS. By H. C. CAREL, B.S., Assistant Professor in the University of Minnesota. Third Edition. H. H. Wilson, Minneapolis.

THIS short syllabus of 180 pages is built on much similar lines to other works of the kind. There is nothing distinctive about it and it no doubt fulfils a useful and worthy function in the home of its adoption.

## BOOKS RECEIVED.

*The* MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

REPORT OF THE HEALTH OFFICER OF THE DISTRICT OF COLUMBIA. 1902. 8vo, 275 pages. Illustrated. Washington.

VIBRATORY STIMULATION. By Dr. M. F. Pilgrim. 12mo, 152 pages. Illustrated. Metropolitan Publishing Co. New York.

DISEASES OF THE STOMACH. By Dr. Max Einhorn. Third edition. 8vo, 534 pages. Illustrated. Wm. Wood & Co. New York.

DISEASES OF METABOLISM AND NUTRITION. By Dr. Carl von Noorden. Part III. 12mo, 64 pages. E. B. Treat & Co. New York.

AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY. By Drs. E. L. Keyes and E. L. Keyes, Jr. Octavo, 826 W. B. Saunders. New York, Philadelphia and London.

SURGICAL DISEASES OF THE GENITO-URINARY ORGANS. By Drs. E L. Keyes and E. L. Keyes, Jr. Octavo, 826 pages. Illustrated. D. Appleton & Co., New York and London.

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## ORIGINAL ARTICLES.

### INTESTINAL INDIGESTION (DYSTRYPSIA).*

BY JOHN C. HEMMETER, PH.D., M.D., ETC.,
OF BALTIMORE, MD.;
PROFESSOR IN THE MEDICAL DEPARTMENT, UNIVERSITY OF MARYLAND; DIRECTOR OF THE CLINICAL LABORATORY, ETC.

As I UNDERSTOOD your President, I was to give not an exhaustive report, but a critical and instructive summing up of that which is of clinical significance and of practical importance concerning Dystrypsia, and to present this as conceived through personal critical experience.

We are living in a period in the history of medicine in which the experimental tendency has gained supremacy over speculative philosophy in medicine. But we are in the possession of such an enormous amount of new material and facts, which by additional experiments is daily increasing, that the new facts frequently must be allowed to remain unused and are, for the time being, of no assistance in the advancement of our science. In this connection I must again repeat what I have emphasized in the preface of the second volume of my work on "Diseases of the Intestines," namely, the difference between *truth* and mere *facts.* These two are often, unfortunately, considered synonymous. Facts are little truths that our senses are capable, for the present, of comprehending, but back of and beyond these facts later experience often reveals the higher and greater truth. An experimental fact which to-day seems absolutely disconnected and therefore without meaning, may to-morrow, when viewed in another light, suddenly assume a far-reaching significance and importance. No new fact of experience, be it at present apparently ever so remote from practical understanding, need be considered worthless—provided it is correct. It may be allowed to rest as raw material for a time, but it is probable that in another association, it may acquire an importance which we did not anticipate.

But this I must emphasize, that an isolated, disconnected fact of experience or experiment, has for the time being no significance for the progress of medicine. This significance comes only then when we can arrange and fix this fact into the already existing and firmly established architecture of our knowledge. There exists a danger in overrating the value of single facts of experience and experiment. Individual facts discovered this way are accumulating to such an extent that we are completely submerged under an ocean of experimental results, and the intellectual interpretation which fits them into the synthetic structure of our science is missing. Physicians who are not participants in experimental undertaking, feel this absence of the connecting links between an enormous number of new acquisitions very painfully, which, though experimental, are in a sense empirical. This is also true of the experimental acquisitions in bacteriological as well as biochemical domains. In the eighteenth and during the first part of the nineteenth centuries medicine was comparable to a sterile unproductive heath, in which some evil spirit drove about the speculative medical philosophers in a circle. Now we have gotten into an overfruitful swamp or jungle in which the facts grow so luxuriantly that they threaten to smother our thinking powers. The tendency of all new laboratories is to bring out new facts. Let us have all of them if it must be, but what we need as much, if not more than new facts, are master minds who will instruct us in the interpretation of these facts, and give them a meaning and value by fitting them into the synthetic structure of medicine. Martius (Pathogenese innerer Krankheiten) compares modern medicine to a sense-confusing concert, and what is needed is a disciplinarian to instruct us concerning the leading *"motives,"* to seek the familiar law in the revealed wonders of the present time.

> "Sucht das vertraute Gesetz in des Zufalls grausenden
> Wundern,
> Sucht den ruhenden Pol in der Erscheinungen Flucht."
> —*Schiller.*

Alexander von Humboldt, in his monumental work "Kosmos," describes the condition of the mind in one to whom a promised land of research of any kind has opened itself, in a very beautiful manner. The following are his words: "It is a custom of those who would like to conduct others to the summit of mountains, to describe the path as pleasanter and easier as it will be found in reality. It is their habit to praise the glorious views from the mountains, even though they may divine that large portions of the regions below may be concealed in fog. They know also that in this concealment there is a mysterious charm and that in a hazy perspective distance the impression of infinity will be made reflecting in a serious and divining manner in the mind and in the sentiments." And I may add that this feeling of mysterious charm will in the right kind of a mind elicit the desire of a closer acquaintance with that region seemingly so far away; and this is about the conception that I have of the sentiments with which an investigator should approach the solution of difficult problems of any kind. The stimulation which comes from everything that is new and understood makes us put up with many a stony path and much hard work, in seeking further knowledge. In connection with the accumulation of single facts of experience and experiment in medicine, the correlation of which with our general knowledge of already established truths has not yet taken place, Humboldt says: "It is a safe criterion of the quantity and quality of the discoveries which we may expect in any science, when the facts seem yet to stand isolated and without relation to another." The great plethora of experimental results, therefore, is rather to be interpreted as a good sign, only we will have to be cautious not to regard in the light of a law what is in reality only a recent acquisition standing, as a rule, in very loose relation or having no connection at all with the synthetic structure of medical knowledge.

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* Address before the New York Academy of Medicine, Section on General Medicine, December 16, 1902.

Our main efforts in diagnosis will as a rule be directed to separate the intestinal neuroses from bowel diseases with a distinct anatomical substratum. The most frequent of the latter are the various types of enteritis. In acute enteritis of the jejunum and ileum most important objective evidences are found in abnormal condition of stools, mostly diarrheic and thick like gruel—characteristic features are (1) shreds of *mucus* intimately admixed with the fecal matter, (2) *bile pigments,* (3) *epithelia and muscle fibers* stained with bile. If stool is solid a *test lavage of colon* should be made to differentiate catarrh of small from that of large intestine; if the lavage water brings out large connected shreds of mucus or membranes or masses of glassy mucus, we have a colitis. We may have an enteritis at the same time, but this cannot be definitely established if the colitis is certainly present. Enteritis running its course with obstipation has no characteristic subjective symptoms. The objective signs are bile pigments, the constant presence of abundant muscle fibers and well-recognizable starch cells, and of fat in form of oil droplets, fatty acid crystals or soaps. The exact localization of catarrh of the small intestine is practically impossible.

*Dyspeptic Diarrhea in Connection with Stomach Diseases.*—In the gastric condition known as achylia gastrica—complete loss or suppression of gastric secretion (HCl and ferments)—we may encounter severe diarrheas, during which the subjective gastric symptoms are completely submerged under the clinical picture of what looks like acute enteritis. This occurs also in the abnormality of gastric secretion which I have first called attention to and designated as *"Heterochylia"* (from ἕτερος. meaning "other," or different, varying, and χυλός, meaning juice). (See Hemmeter, "Diseases of the Stomach," third edition, p. 870.) For the recognition of this dyspeptic diarrhea test-meal analysis is indispensable, and stool examination necessary. The gastric peristalsis is unimpaired as a rule, but chymification absent entirely. The feces show unchanged residue of meat, connective tissue, especially vegetable foods and even fat residues. The work of Pawlow has shown conclusively that the gastric HCl is the most essential stimulation to the formation of pancreatic juice. In his masterly research Pawlow discovered a new enzyme in gastric secretion—a specific ferment—chymaze, which does not digest food, but which accelerates the action of the ferments of the pancreatic secretion. The digestive tract is not universally and uniformly irritable or stimulatable by every mechanical, chemical, thermic or dietetic agent, but there is a specific irritability and a specific reaction with regard to the peculiarity of every individual digestive demand or duty. There is a most artistic digestive mechanism of digestion revealed by Pawlow's work, which in its sublime fineness, preciseness and accuracy and inner adaptiveness to utility and purpose exceeds any new discovery of modern physiology. If you want to feel proud of being a physician, if you wish to feel the ennobling consciousness and enthusiasm that comes from successful, hard and earnest work, from difficulties overcome, read Pawlow's "Die Arbeit der Verdauungsdrüsen."

The most efficient means of counteracting dystrypsia due to pancreatic insufficiency is to bring about a healthy appetite. Appetite is the stimulus to normal gastric secretion, and this in turn the normal stimulant to healthy pancreatic secretion.

Although an article on intestinal dystrypsia is not the proper place to consider the newer gastric physiology, a brief reference to recent discoveries is indispensable—not simply because the stomach is the preparatory organ for intestinal digestion, but also because the chemical processes which various food-articles undergo in the stomach are of far-reaching importance for the changes which are to occur in these foods after they reach the intestines. Many of the older authors, beginning with the American physiologist Beaumont, believe that the mechanical irritation of the foods cause the gastric secretion, but the experiments in Pawlow's laboratory have proved the fallacy of this view. In the first place, if the secretion were due to simple mechanical irritation, there is no reason why irritation with the point of a glass rod, with a feather, or with sand placed in the stomach, should not cause the secretion also. The mistake of the older experimenters, according to Pawlow, grew out of the fact that they ignored the so-called psychic secretion—a secretion which can be set up by the mere smell of food, or even by a very intense feeling of hunger. If the esophagus of a dog is cut, and its end sewed to the edges of an abdominal wound, and at the same time a gastric fistula is established, pieces of meat which are fed to the dog after healing of these fistulæ, will not reach the stomach, but fall out of the upper end of the fistula leading into the esophagus. Nevertheless in five or six minutes after swallowing the food gastric juice begins to be secreted, running from the gastric canula first in drops and afterward in a continuous stream. If the dog be offered meat without receiving it, the gastric secretion will also appear, though not so plentifully as when the dog was actually allowed to eat the meat. A further interesting phenomenon observed on these dogs was that no secretion followed the swallowing indigestible substances like small stones. These experiments furthermore elicited the astounding fact that for every kind of food a definite gastric secretion is formed of specific composition. Therefore we can say that the stomach provides a certain chemical agent to meet each case. We must therefore conclude that the mucous membrane of the stomach is capable of distinguishing between the varieties and classes of food that come in contact with it, much as the skin recognizes mechanical, chemical, thermic and electrical stimulation. The question might be asked "What is the object of this psychic secretion?" for Pawlow has clearly established the existence of two kinds of gastric secretion, the chemic and the psychic. This question applied to the human physiology would be the same as inquiring "What is the object of appetite?" The answer is that under the influence of the psychic secretion a gastric juice is furnished which is much more effective than that which is secreted under purely chemical stimulation of the food, *i.e.*, when food is taken without any special appetite. Furthermore, under the influence of psychic secretion foods which otherwise would not stimulate the gastric mucosa to secretion become converted by the already present psychic secretion into something else which constitutes a further stimulant to the secretion of gastric juice. For instance, if a solution of albumin be administered to a dog upon which a Pawlow operation has been performed, (*i.e.*, splitting off part of the stomach, with all the vessels and nerves intact, and making this second smaller stomach communicate with the external abdominal wall, but not with the general cavity of the large stomach from which it is dissected (See International Clinics, XII series, Vol. II, p. 276)—there will be no secretion from the small stomach, for albumin by itself does not excite chemical secretion. But if the psychic secretion is set up by some other means, before the albumin is placed in the large stomach—for instance, by waving a piece of meat before the dog's eyes—then following the introduction of albumin, a secretion will be found in the small stomach which is qualitatively and quantitatively greater than the psychic secretion alone, or when albumin is given alone it is evident that while albumin in itself does not excite secretion, the products of albumin do cause this secretion. The same is true of pieces of bread which when placed in the large stomach through the fistula will not promote a secretion, but if the dog is allowed to swallow the bread, secretion commences and continues for several hours. Psychic secretion, therefore, is a preparatory secretion, transforming substances which would otherwise not stimulate the stomach, into such conditions which can accomplish this stimulation. The fact that bread will cause a secretion when chewed and swallowed and not when placed directly in the stomach through the fistula, may be interpreted (as Pawlow and Peter Borisoff do), as proving the secretion of a gastric juice under psychic influence but—as I will show presently—it may be due to a special ferment in the saliva that stimulates gastric secretion.

Further revelations from Pawlow's laboratory disclose very important relations between the various classes of food, permitting the conclusion that they may mutually advance or interfere with the digestion of their various constituents in the gastric chyme. For instance, starch paste does not by itself promote gastric secretion, but when mixed with meat it was found to accelerate the action of the gastric juice, increasing its digestive power. On the other hand the addition of fat to a meat diet diminished the quantity of gastric secretion as well as its digestive power. Furthermore, it was demonstrated that the stomach is capable of distinguishing between lactic, butyric and hydrochloric acids, and responded to each of these acids with a varying quantitative secretion. As lactic and butyric acids are products of gastric fermentation, their stimulating influence on gastric secretion is of therapeutic importance. It is evident therefore that the stomach is extremely delicate in detecting not only the composition of foods and regulating the composition of its secretion correspondingly, but that it can distinguish between various organic acids. These experiments furthermore gave the clue to the treatment of gastric secretory disorders not by drugs merely, but by dietetic measures.

I have dwelt upon these results because disordered gastric digestion is, in my opinion, very often the cause of intestinal dystrypsia. By these gastric disorders I do not necessarily mean the organic diseases of the stomach (gastritis, ulcers, etc.), but simply the improper composition of the diet causing abnormal chemical formations in the chyme; and as a healthy gastric digestion is a necessary precursor to a normal pancreatic secretion and duodenal digestion, a reference to these results requires no apology. Referring once more to the new gastric ferment "chymaze," which does not digest food but accelerates the action of the pancreatic ferments, it may interest you to learn that I have discovered in normal saliva a ferment which, if added to digesting mixtures of gastric juice, accelerates the digestive power of the gastric secretion. In other words, this new salivary ferment will effect a more rapid conversion of proteid into the albumoses and peptones, a quicker solution of boiled egg albumin and of fibrin, than would occur without it. I have proposed the name *"salivary secretion"* for this gland stimulating ferment. A new and wonderful field for work is herewith unlocked to those medical practitioners who are conscious of the aims they wish to attain. Not only is normal duodenal dependent upon normal gastric digestion, but normal gastric digestion is in turn dependent upon normal buccal or oral digestion. What an admirable mutual interdependence, correlation and interaction, illustrating in a most subtle scientific way Shakespeare's saying:

> "May good digestion wait on appetite, and health on
> both."

Therefore if we are desirous of having a normal intestinal digestion let us above all things see that the mouth and the stomach are in good condition.

It will be impossible within the limits of this report to dwell fully upon all the various conditions which may bring about dystrypsia. I will limit myself to a more especial consideration of those forms due to qualitative and quantitive abnormalities in the diet. Abnormal digestion may take place either exclusively in the albuminous foods or the carbohydrate foods. If there is a qualitative unhygienic mixture of the diet, causing an excess of the carbohydrates, a most frequent form, the various bacteria and fungi will cause an excessive fermentation of the carbohydrates with the formation of organic acids, particularly of acetic and lactic acids. This organic acidity of the duodenal and jejunal chyme may become so great that the action of the digestive juices, the pancreatic juice and the bile, will be interfered with, for especially the pancreatic juice requires a certain degree of alkalinity for its action. I have in previous publications advocated the restriction of the word "fermentation" to the bacterial decomposition of the carbohydrates, and the limitation of the word "putrefaction" to the bacterial decomposition of the proteid and albuminous food. (See "Diseases of the Intestines," Hemmeter, Vol. I.) This form of intestinal fermentation of the carbohydrates is one of the most frequent causes of infantile diarrheas, in which there is in many cases no material change in the mucosa of the intestine; and it may give rise to certain characteristic symptoms, which have hitherto been most carefully studied in children. Most prominent among these symptoms are diarrheic discharges, anorexia, acid eructations, and vomiting of acid masses. The abnormal peristalsis is due to the irritations by the excessive organic acid, especially acetic acid. The fermentation begins in the jejunum, and the hyperperistalsis begins there also. Successive parts of the small intestine are involved in the hyperperistalsis, and consequently the jejunal contents are hurried through the entire small intestine with a great velocity. When such an attack of fermentative dystrypsia begins, the first evacuations represent the contents of the lower bowel, and as a rule presents nothing characteristic, but these first stools once evacuated, the following stools are highly characteristic and have given the whole clinical picture the name of *jejunal diarrhea*. The recognition of these stools depends upon our familiarity with the condition of the normal jejunal chyme. We will have to bear in mind that the contents of the jejunum are normally very rich in mucin, and that the jejunal chyme is physiologically gelatinous as if a thick, tough, glassy liquid had been stirred into the macerated food. Inasmuch as an abundant presence of mucus in the stool is correctly attributable to pathologic catarrhal changes in the intestinal wall, we are compelled to seek for other evidence to decide between what is (1) a jejunal stool with its physiologic admixture of mucus, simply present in that apparently abnormal amount because it is rapidly hurried through the entire intestinal canal, and (2) what may be a catarrhal stool dependent upon enteritis. The distinguishing features for a catarrhal stool are the presence of epithelia and round cells derived from the mucous membrane which are absent in the jejunal stool. The jejunal stool is very rich in bile pigment, has only a slight fecal odor, is generally of an acid reaction. By these features it will be possible to distinguish between the jejunal and the catarrhal stool. The dystrypsia due to carbohydrate fermentation which thus gives rise to the jejunal diarrhea, is important also because in adults as well as in children it may eventuate in actual catarrh of the mucosa or enteritis. The anamnesis indicating an excessive carbohydrate ingestion, and the examination of the stools showing unusual amounts of undigested starch by Lugol's solution, will clinch the diagnosis. In my laboratory starch is at times not found by Lugol's solution, not even in abnormal stools, where we would expect to find it. I cannot believe that the starch is digested in such cases, but think it is decomposed by fermentation for the fermentative products of starch are abundantly present in such stools. Van Ledden Hülsebosch (Makro. u. mikroskopische Diagnostik der menschlichen Excremente, 1899), however, claims to have found starch in his stools, within and without starch-containing plant cells every time he ate potatoes. Nothnagel's experience led him to look upon the presence of starch in isolated granules as well as in fragments, in the feces as pathologic if these could be found quite abundantly.

It is therefore not an easy matter to decide between what is normal and abnormal quantitatively and qualitatively concerning the presence of starch in the feces. Unfortunately for the exactness of their observations, Hülsebosch and others did not state how much starch was ingested when they observed it in the feces. Evidently starch diet can in the normal individual be so far augmented as to make undigested starch appear in the feces. Then again, the process of cooking will have a marked influence on this phenomenon. Raw or only partially cooked starch will leave a greater undigested residue than boiled starch. We have no right to expect the intestines of the human being to digest raw starch completely. Starch occurring within cellulose membranes has no diagnostic importance. Only the starch which occurs in isolated pastelike residues is significant. In the normal individual no or very few such isolated starch residues can be found on a diet containing a medium amount of carbohydrates. If such residues are abundant—they signify an intestinal disturbance—and it is a well-known fact that such residues are not abundant except in stools of a thin consistence, this in itself pointing to an abnormality. The seat of such starch dystrypsia is the small intestine—for the stomach and colon are not directly and actively concerned in amylolysis. And as starch is the most readily digestible substance in our diet the appearance of an abundance of starch residues in the stool, as a rule, points to a severe digestive disorder, if the cases are chronic, the acute fermentative dystrypsia of adults excepted. In chronic persistent cases it is my custom to exclude all starch from the diet and in reallowing it to grant only such amounts as will be completely digested, as shown by fermentative test of feces and staining with Lugol's solution of iodine. If the feces give a marked primary fermentation, according to Adolf Schmidt's test, I exclude starch. Such is my custom based on an abundant experience and it has never caused me to regret the restriction. I do not, by this admission of the value of Schmidt's fermentation, desire to be understood that I accept his method as infallible, but I do not believe that the feces should normally give an intense, immediate fermentation, for this is due either to carbohydrates or to their products. Microscopical examination of stained preparations of the feces will permit of reliable deductions, and this method is more applicable to practice. Normally Lugol's solution should show no blue color in the stool.

*Remnants of Meat Fibers.*—An abundance of undigested muscle fibers after a weighed test diet (See Ad. Schmidt u. J. Strasburger, Die Faeces des Menschen, S. 4 and 5) is always significant of abnormal intestinal digestion and if the nuclei in the muscle fibers are very evident it signifies abnormality of the secretion of the pancreas (insufficiency of the pancreas). The treatment of course will in the first place have to regard the diet, for in the great majority of such cases as a rule nothing further is necessary. Similarly if the dystrypsia is due to excessive proteid ingestion, an exclusion of this class of foods will be necessary. But a decision to which of these two classes the dystrypsia is assignable is not always to be arrived at promptly and surely. Here clinical experience and macroscopic and microscopic examination of the feces are telling factors. In either case total abstention from food is one of the most effective means of treatment, especially if it follows an evacuation of the entire intestinal canal effected by the old and established remedies, of which there are still none more practical than calomel and castor oil. I have rarely found intestinal disinfection necessary in such cases, if the diet regulations were faithfully carried out.

So the presence of an abnormal amount of muscle fibers in the stool indicates a disturbance of intestinal digestion in the broadest sense, it does not enable us to precisely define the character of this intestinal dystrypsia, or to localize it. If the nuclei are well preserved in the muscle fibers found in the stool, we are justified in the conclusion that the function of the pancreas is insufficient, because the pancreatic secretion is the only one which can digest the nuclei of muscle fibers, but extensive putrefactive processes in the colon can also effect nuclear solution. Therefore it is only the positive finding of preserved nuclei that permits of an exact deduction.

*Presence of Connective Tissue.*—As the pancreatic secretion is incapable of digesting the connective tissue in unboiled meat, the presence of an excessive amount of undigested connective tissue fibers when scraped raw beef has been eaten, justifies us in the conclusion that the gastric digestion is imperfect. Therefore the presence of an excessive amount of connective tissue points to abnormal gastric digestion, and not to an intestinal disturbance.

*Fat.*—The appearance of droplets of neutral fat and of fatty crystals is pathological, but the appearance of fat in form of soaps has no diagnostic significance.

We have therefore in the preceding abstracted the diagnostic significance of the appearance of starch, muscle fiber, connective tissue fibers, fats, fatty acids and soaps, in the feces, and these comprise practically all food remains that permit of diagnostic deductions.

*Treatment.*—(1) The diet. In the author's experience it is impossible to succeed with a radical enforcing of strict diet of any kind, but it is wise to recommend what is known as a bland diet; above all things, to study the stools, if possible by the microscope and stool-sieve, in order to discover what foods pass the intestinal tract undigested. These must, thereupon, be avoided, or given in so finely divided a state and in such small quantities that their digestion becomes easier. It is also of importance to utilize the observations which the patients have made upon themselves with regard to the diet. They frequently know what causes distress and what can be digested. The stool examination, however, will guard against deception. The author makes it a rule to forbid alcohol, tea, coffee, and tobacco to these patients. In great exhaustion he allows small quantities of a superior wine or whisky, under strictest control. In some patients a diet rich in carbohydrates, in others one rich in proteids (beef, fowl, fish), is well digested. In fact the diet to be followed can not be decided until a dietetic experiment is made. (2) The same holds good with regard to the treatment of the constipation. Here the practitioner will have to decide whether this is due to atony or spasm of the intestinal musculature, for what will benefit one condition will harm the other. Here, also, in most cases, a therapeutic experiment will be necessary before we can discover whether we are confronted with atony or spasm. The majority of these patients require exercise after meals. A few that are weak may require rest in bed. Especial attention must be paid in the selection of the food for the last meal of the day. Great moderation in the amount eaten and the digestibility are the most important points to bear in mind. A heavy supper will often produce a restless night. (3) The treatment of the general neurasthenia will be that by electricity, hydrotherapy, massage and baths. Insomnia demands attention and often yields to efforts directed to cleaning the colon and stomach. Hypnotics must be avoided as long as possible.

Whenever a dystrypsia has existed for a considerable time on a purely functional basis, it may eventuate in a disease with definite anatomical alterations. One of the most common symptoms is augmented intestinal peristalsis as a result of irritation by fermentative masses. A condition results in which the contents of the upper part of the bowel are hurried through the entire intestine in an unaltered condition—*i.e.*, the stools may present the same properties as are characteristic of the contents of the jejunum, which are normally thick, but liquid and gelatinous. When there is excessive bacterial activity, the various intestinal antiseptics have been advocated. Personally the author has been able to get along without them in the great majority of cases. He has seen very grave results follow the administration of the irritant antiseptics. Perhaps the most available are bismuth salicylate and subgallate, betanaphthol bismuth, thymol, menthol, resorcin and salol. Creosote, even in small doses, has, in the author's experience, deranged the stomach in sufferers from dystrypsias. In cases in which the gastric secretion of HCl was suppressed, he made a trial with the orexin so strongly recommended by Penzoldt, and noted in three cases an irritative diarrhea which became manifest after the first two doses, and ceased when the remedy was discontinued.

The following formulas have been used in a large number of cases by the author, for the special symptoms of intestinal dystrypsia.

The first one has proved useful in the putrefactive diarrheas, especially when associated with abdominal pain:

| | | | |
|---|---|---|---|
| ℞ | Tannigen .......... | 4.00 gm. | (1 dram) |
| | Bismuth subgallate.. | 8.00 " | (2 drams) |
| | Salol .............. | 1.55 " | (24 grains) |
| | Denarcotized extract of opium......... | 0.20 " | (3 grains). |

This can either be made into twelve capsules or prescribed with six ounces of some elixir, of which the author prefers the elixir of gentian and the essence of calisaya (P. D. & Co.), three ounces of each, in doses of a tablespoonful three or four times a day.

The author's favorite recipe for anorexia from gastric hypochylia in intestinal dystrypsia is the following:

| | | | |
|---|---|---|---|
| ℞ | Strychnine sulph. ... | 0.02 gm. | (⅓ grain) |
| | Dil. hydrochloric acid | 15.00 " | (½ ounce) |
| | Fluid ext.condurango | 45.00 " | (1½ ounces) |
| | Elixir of gentian.... | 180.00 " | (6 ounces). |

M. Sig.: One-half of a fluidounce in two ounces of water. one-half hour before meals, through a glass tube.

The dilute HCl cannot be given in sufficiently large quantity to completely replace the normal secretion if this is absent entirely. Its function is merely that of a gastric and pancreatic stimulant in these doses.

Or:

| | | | |
|---|---|---|---|
| ℞ | Tinct. of nux vom.. | 9.30 gm. | (2½ drams) |
| | Essentiæ calisayæ (P. D. & Co.)........ | 60.00 " | (2 ounces) |
| | Elixir of gentian.... | 180.00 " | (6 ounces). |

M. Sig.: One-half of a fluid ounce thrice daily, one-half hour before meals.

When there are evidences of anemia with the gastric hypochylia, the following acts satisfactorily:

| | | | |
|---|---|---|---|
| ℞ | Quin. sulph. ........ | 1.16 gm. | (18 grains) |
| | Strychnine sulph.... | 0.02 " | (⅓ grain) |
| | Sulphate of iron.... | 0.80 " | (12 grains) |
| | Arsenious acid...... | 0.012 " | (⅕ grain). |

M. Sig.: Make into twelve pills. One pill three times daily. They must be prepared fresh and not coated.

Boas uses the following powder for anorexia:

| | | | |
|---|---|---|---|
| ℞ | Ext. of nux vom.... | 0.024 gm. | (⅖ grain) |
| | Bismuth subcarbon.. | 0.520 " | (8 grains). |

M. Sig.: Make twenty powders. One powder three times daily.

Menche has warmly recommended resorcin sublimate, and it undeniably improves the appetite in cases of incipient gastric and intestinal fermentation. It has also a slight sedative action. The following is Menche's formula:

| | | | |
|---|---|---|---|
| ℞ | Resorcin resub. ....... | 2 gm. | (30 grains) |
| | Tinct. of rhubarb...... | 15 c.c. | (½ ounce) |
| | Simple elixir, enough to make ............... | 90 " | (3 ounces). |

M. Sig.: A tablespoonful twice daily.

Resorcin can also be advantageously combined with bismuth salicylate, salol, and betanaphthol in the following manner:

| | | | |
|---|---|---|---|
| ℞ | Resorcin resub......... | 5 gm. | (75 grains) |
| | Bismuth salicylate,<br>Powdered rhubarb,<br>Sodium sulphate,of each | 10 " | (150 grains) |
| | Milk-sugar ........... | 15 " | (225 grains). |

M. Sig.: An even teaspoonful twice to three times daily.

If dystryptic diarrhea is present the rhubarb and sodium sulphate must be replaced by calcium phosphate and calcium carbonate, of each 25 grams.

The following formulas are recommended by Ewald for anorexia with fermentation:

| | | | |
|---|---|---|---|
| ℞ | Tinct. of nux vom.. | 22.56 gm. | (6 drams) |
| | Resorcin resub...... | 5.40 " | (83 grains) |
| | Tinct. amar. ....... | 11.25 " | (3 drams). |

M. Sig.: Take ten to fifteen drops every two hours.

| | | | |
|---|---|---|---|
| ℞ | Fluid ext.condurango | 17.00 gm. | (4½ drams) |
| | Resorcin resub...... | 4.00 " | (1 dram) |

M. Sig.: Thirty drops four times daily.

In all cases of intestinal dystrypsia the aim must be to understand the cause and remove it. Not to give medicines except as an "ultima ratio."

# A BRIEF REVIEW OF SOME OF THE ETIOLOGICAL FACTORS IN INTESTINAL DYSPEPSIA.*

BY E. FRANKLIN SMITH, M.D.,

OF NEW YORK;

MEMBER OF THE AMERICAN MEDICAL ASSOCIATION, NEW YORK STATE AND COUNTY MEDICAL ASSOCIATION; DELEGATE TO NEW YORK STATE MEDICAL SOCIETY: MEMBER NEW YORK COUNTY MEDICAL SOCIETY; FELLOW NEW YORK ACADEMY OF MEDICINE, MEDICAL ASSOCIATION OF THE GREATER NEW YORK, ETC,

AN established principle, or axiom, in the application of remedies, or remedial agents, in the treatment of disease is that the causative factor should first be determined. The importance of this cannot be overestimated, and until more exact knowledge is given us with regard to the physiology of digestion very little that is definite can be given you. The fields of physiology, physiological chemistry and bacteriology are now being so well worked that we can feel assured that our knowledge of the physiology of digestion will be greatly added to within a short time. Our almost entire lack of definite knowledge of the causes of intestinal dyspepsia is well shown after a review of the extensive literature that has been written on this subject and which I have reviewed thoroughly. As the result of my survey I am compelled to agree with Ewald, who, after speaking of secretion, absorption and motion, says: "It is an unpleasant fact that we know very little about the trio."

I have adopted the classification[1] of our honored guest of this evening, Dr. Hemmeter, not only because of its high merit, but also because of my appreciation of the work that he has done in this particular field.

Intestinal dyspepsia may be due to (1) abnormalities of secretion; (2) abnormalities of absorption; (3) abnormalities of peristalsis.

*Predisposing Factors.*—(1) Age. Intestinal dyspepsia may occur at any age, but it is more commonly met with between the thirtieth and fortieth year and before the age of ten; (2) Sex. It is found more frequently in the male sex on account of more frequent eating and overfeeding; (3) Heredity. This is supposed to play a very important part in the production of this disease, and it is occasionally found that several members of one family will have the same idiosyncrasy regarding a certain article of diet; (4) Previous attacks predispose to others; (5) Occupation. Persons engaged in prolonged mental labor, or who are overburdened with the grave responsibilities of business, or who sympathize too much with the distresses of others, are all very prone to suffer from this disease. The influence of the mind upon the intestinal is even greater than that upon the gastric indigestion. Again, such occupations as horse-shoeing, tailoring and other trades in which the body is bent forward may cause a local anemia and perverted secretion.

*Exciting Causes.*— Following Hemmeter's classification I shall divide them under nine headings, as follows:

I. *Intestinal Dyspepsia, Due to Pathologico-Anatomical Alterations of the Intestinal Walls, Nerves, Lymphatics, or Blood Vessels.*—Diseases or injuries of the small intestines may be accompanied by dyspepsia if the lesion deprive the mucous lining of its power of absorption, and under this heading we may include enteritis, enterocolitis, ulcers, neoplasms, obstructions, deformities either congenital or acquired, displacements, such as enteroptosis, or prolapse of other viscera constituting splanchnoptosis. B. Stiller[2] says that the variety of enteroptosis which accompanies nervous dyspepsias is always of neurasthenic origin. On the other hand, Herzog[3] states that nervous dyspepsia may be the result of an enteroptosis, but not the cause of it. He does not believe that the maladie de Glénard belongs to this category of nervous dyspepsias, nor is it a variety of this affection.

II. *Absence or Deficiency of the Intestinal Digestive Secretions, Especially of Bile and Pancreatic Juice.*—The importance of this subdivision can be well understood when the statement has been made that it has been estimated that the juices secreted during digestion in a man weighing 140 pounds amounts to 23 pounds in twenty-four hours. Intestinal digestion may be disturbed by abnormalities in the three main secretions (1) succus entericus, or intestinal juice; (2) the bile; (3) the pancreatic juice.

(1) *The Succus Entericus.*—So little is known in regard to the intestinal juice that no satisfactory explanation as to how abnormalities of this secretion affect digestion has thus far been given. It is supposed, however, to play a very insignificant part in the digestive process.

(2) *The Bile.*—Just what rôle the bile plays in the digestive process has always been a matter of much discussion, some claiming that it takes a very important and essential part, while others claim that it is simply an excretion. Experiments have shown though that if we take an animal and feed it a given quantity of fat, fat will not appear in the feces; now, if the bile is prevented from reaching the intestines and the same quantity of fat be fed the animal, fat will appear in the feces. We know that in jaundice there is a reduction of fat absorption. Physiologists have wondered why carnivorous animals should possess gall-bladders and why most herbivorous animals are without them. Clinically it has been shown that the gall-bladder is not an essential organ as it often has been found to be obliterated or destroyed after death and yet, during life, no bad symptoms were observed. The continual emptying of bile into the intestines seems to be a perverted process and what effect that has upon intestinal digestion is still a question. (*a*) Polycholia.—Ether, chloroform, arsenuretted hydrogen, phosphorus and olive oil, or any poison which will injure the red blood cells, will cause an increase in the bile-pigment. In such instances the hemoglobin is liberated from the erythrocytes and changed to bilirubin by the hepatic

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*Read before the Section on General Medicine, New York Academy of Medicine, December 16, 1902.

cells. (*b*) Acholia.—A lessened production of bile may occur from causes which diminish the size of the liver, as after resection, from hunger, febrile diseases and uremia. The production of bile may be reduced by certain chemical agents, among which may be mentioned iodide of potassium, calomel, atropin, strychnine in poisonous doses, and alcohol. Again a lessened amount of bile reaches the intestines when there is any obstruction by gall-stones, chololithiasis, catarrhal icterus, neoplasms or floating kidney which may press upon the common gall-duct. When there is a lack of the normal quantity of bile it loses its antiseptic action, and there is a stagnation of the bowel contents from a lack of the purgative action of the bile, and we then note increased fermentation with the development of irritating products which cause intestinal dyspepsia. Sometimes the bile may contain toxic substances which may irritate the duodenum and lead to catarrh of the mucous membrane and even to ulceration.

(3) *The Pancreatic Juice.*—Under this heading we may consider: (*a*) Succorrhea pancreatica.—A reflex pancreatic secretion may be increased by any irritation of the lingual nerve, or of the central end of the vagus. Pilocarpine will do the same thing. (*b*) Hypochylia and achylia pancreatica.—A diminution, or absence, of the pancreatic secretion may be due to partial or general atrophy of the gland structure. Diminished secretion may be due to nervous influences; it may occur in anemic conditions, in subnutrition, and in general weakening of the organism; again, it may be due to certain chemical substances, such as atropin and toxic doses of strychnin; it may also be due to febrile disturbances. Carcinomatous or other malignant disease of the pancreas is attended with a lessening of the amount of pancreatic juice. Chewing tobacco, and to a less extent, smoking, are causes of a deficiency or altered pancreatic secretion.

III. *Intestinal Indigestion Due to Qualitative, or Quantitative Irregularities of Diet.*—Under this head we have three subtypes: (1) The diet is excessive in quantity and cannot be transformed in a normal manner by the amount of digestive secretions present. (2) Although normal in quantity it may be irregularly and unhealthfully mixed; there may be an excess of fat, or proteid, or carbohydrates, as the case may be. Overeating is a very frequent cause of intestinal dyspepsia if the food is not completely digested, as this permits the multiplication of germs. If too much starch is taken it interferes with gastric digestion of the proteids and the food ferments in the stomach and produces lactic and butyric acids in sufficient quantity to destroy the intestinal ferments. (3) Abnormal and injurious substances may be contained in the diet, either in the form of toxins, the result of putrefaction and fermentation in the food itself, or chemical substances that may have been added by accident or design for therapeutic reasons. It is well known that many chemicals and medicines taken for the relief, or cure, of gastro-intestinal diseases exert a deleterious effect upon the normal course of digestion. The imprudent use of drugs, especially laxatives, may cause intestinal dyspepsia. Many drugs that are given to relieve supposed indigestion and dyspepsia are actually the causes of them. Condiments, particularly pepper, mustard and ginger, bromides, salicylate of sodium, all astringents, the salts of bismuth, iron when not given immediately after a meal, belladonna, bicarbonate of sodium, hydrochloric acid and pepsin, and many others may be the means of causing or increasing intestinal dyspepsia. Often hydrochloric acid is administered when the stomach is forming an excess of it.

Certain articles of food may give rise to intestinal dyspepsia; among these may be mentioned fruits, green corn, cucumbers, turnips, sour milk, decomposing eggs, fish, meat and sausages. Again certain combinations, such as milk and beer, sour milk and cucumbers, ice-cream and cucumbers, or cider and sour beer, are frequent causes. It has justly been assumed that poisonous organic bases, the ptomaines, perform an essential part in these cases. Many have already been determined, such as the tyrotoxicon, lactotoxin and dimethylamin.

Gases that are formed in fermenting food, carbon dioxid, sulphuretted hydrogen and methane, increase peristalsis; so also do the acid products of fermentation, such as lactic, butyric, acetic, caproic and formic acids.

Errors of diet, food or drink that is qualitative or quantitative abnormal, are frequent causes. In the ingestion of abnormal quantities of food and drink the walls of the intestines are excessively distended and so act as a mechanical irritant; or else, the ingesta remain longer than usual since the secretion does not suffice to digest them; therefore, they become the subject of fermentation, the products of which irritate the intestinal wall.

IV. *Intestinal Dyspepsia Due to Abnormal Bacterial Activity.*—A very large number of the cases of diarrheas and dyspepsias occurring in children depend upon fermentation and putrefaction within the gastro-intestinal tract and without being dependent upon any solution of continuity in the mucous membrane. Bacteria are not essential to good digestion and health as was first expressed by Pasteur, although Busch[4] made an observation which is of great interest in this connection. A woman, thirty-two years old, was gored by a mad steer, producing a fistula below the duodenal papilla; he made observations that demonstrated that digestion was possible in the absence of the entire chyme, together with the bile, the pancreatic juice and the secretions of Brunner's glands, all of which escaped through the fistula. Food by the mouth did not satisfy the appetite and it seemed as if she was doomed to die from inanition. But the food introduced below the fistula was digested and she then gained in weight. Digestion must have been effected by bacteria. At the present time we recognize that there is a very large number of bacteria which, through their fermentative action, may convert starches into sugars and also cause these very sugars to ferment. For example, the bacillus subtilis and the spirillum of cheese are both capable of converting starch into sugar. Some bacteria and yeast produce invertin.

Quincke[5] states that certain pathological protozoa found in the intestinal tract may produce intestinal dypepsia. Among the most common is the ameba coli which seems to exert a necrotic and solvent action on the tissues, causing remarkable destruction and breaking down of cells and tissues with the formation of nuclear fragmentation and detritus. The lesions formed are usually found in the large intestines, particularly in the submucous coat. In the superficial epithelium of the intestine is apparently to be found the chief protection against the invasion of bacteria. When the epithelium is well preserved the bacteria are not found in the mucosa beneath; whereas, they may be seen entering it at places where the epithelium has been injured or destroyed. The first step in the pathologic process is probably an injury to the epithelium from an abnormal or excessive fermentation of the secretions in the canal from the toxic products of bateria or from other factors. These altered relations furnish conditions favorable to the activity and more vigorous growth of the varieties of the bacteria which thrive but indifferently in the normal intestines. It is rather startling to learn that over fifty known species of micro-organisms have been identified at various times in the feces, passed by those suffering from intestinal dyspepsia. Of course, they vary not only with the diet, but with the manner in which the food is prepared. The fewer and less active these micro-organisms the more nearly perfect will digestion be. In addition to these Nothnagel enumerates four different varieties of bacilli, nine cocci and four fungi that were present at the same time in intestinal dyspepsia. Is it any wonder that this subject offers such a tempting field to the investigator, the physiologist, the chemist and the bacteriologist?

V. *Intestinal Dyspepsia Due to Abnormal Gastric Chemistry.*—That abnormalities of the gastric secretion may bring about intestinal dyspepsia is a well-known fact from the meteorism and disturbances of peristalsis which follow upon hyperchlorhydria, and also the diarrhea observed in connection with achylia gastrica. In order that we may have a clearer understanding of intestinal dyspepsia it is necessary, as Dr. Hemmeter has stated, that we should have an analysis of the gastric contents. The entrance of chyme into the duodenum causes a reflex secretion of the pancreatic and biliary fluids to an extent to sufficiently neutralize the acid contents of the stomach and establish a degree of alkalinity which is most suitable for the action of these ferments which complete the process of digestion.[6] Therefore, intestinal dyspepsia may be due to an abnormal performance of function of the stomach as well as of the liver and pancreas. Hyperacidity of the gastric juice with an abnormal acid state of the chyme may completely neutralize the alkaline secretions of the small intestines and so stop the digestive function. Again a deficiency in the secretion, which permits of fermentation taking place in the stomach, causes the duodenum to receive a large quantity of extremely acid and undigested form of chyme. Atony of the stomach leads to a stagnation of the food aside from fermentation. Dr. William W. Johnson has made the remark that possibly the most prolific element in the cause of intestinal dyspepsia is deficient mastication and insalivation of food. I believe that it is well to bear in mind that sooner or later every case of aberration of function of one portion of the digestive tract will be followed by some derangement of other portions.

VI. *Intestinal Dyspepsia of Nervous Origin—Neurasthenia Intestinalis.*—This demands insertion in this place on account of the one prominent symptom of intestinal dyspepsia, although logically it should be classed among the neuroses. Boardman Reed believes that in more than half of the cases of so-called nervous dyspepsia the trouble is dependent upon actual disease somewhere in the gastro-intestinal tract. Herzog says that nervous dyspepsia is not only a pure sensory, but mostly a mixed, neurosis and ofttimes in connection with a sensory neurosis there exists a neurosis of motility and secretion. In all works upon practice of medicine the prominent influence of the nervous system upon the secretion of the digestive juices has been emphasized and it is not, therefore, surprising that there should exist a state of intestinal dyspepsia of purely nervous origin which cannot be classified under any other heading.

VII. *Intestinal Dyspepsia Caused by Abnormal Substances, or Irritation, Reaching the Intestines from the Blood.*—Under this heading we may class the dyspepsias occurring in uremia, severe malaria, septicemia, croupous pneumonia, erysipelas, influenza, cholera, icterus, diabetes, gout and the uric acid diathesis, diseases of the blood and blood-forming organs, rachitis, osteomalacea and certain infectious diseases such as typhoid fever, dysentery and septic diseases.

VIII. *Intestinal Dyspepsia Due to the Activity of the Intestinal Parasites (exclusive of bacteria), Worms.*—For me to attempt to review the varieties of cestodes and nematodes would, I am afraid, tax your patience. But all varieties of intestinal worms may give rise to intestinal dyspepsia whose severity depends upon the closer approach to or departure from the health of the individual.

IX. *Intestinal Dyspepsia Due to Hyperperistalsis or Excessive Motility of the Bowel.*—Under this heading we may consider motor neurosis, sensory neurosis and secretory neurosis.

(1) *Motor Neurosis.*—(*a*) Nervous, or morning, diarrhea is a condition observed in nervous and hysterical women and hypochondriacal men. The motor nerves become abnormally irritated

from some emotional disturbance, such as fright, fear or terror, and this causes the diarrhea. It has been observed frequently that in young girls the entrance of food into the stomach causes a diarrhea; the call to empty the bowels may be so urgent as to require them to leave the table before the completion of the meal. (*b*) Nervous constipation is a condition in which there is a nervous inhibition of peristalsis occurring in the hysterical or emotional patients as the result of excitement, worry, fright, etc. (*c*) Enterospasm, or nervous cramps, is a condition in which there is an annular constriction of one portion of the intestine from some peculiar reflex. As a result the contents of the bowel are forced against the narrow lumen and so distends the intestines above, causing colicky pains.

(2) *Sensory Neurosis.*—(*a*) Enteralgia, colic or enterospasm is a condition frequently seen in hysterical, neurasthenic and anemic subjects. There is a pain, neuralgic in character, which may be due to spasm of the intestinal muscles as the result of irritation from drugs, food, poisons or other substances in the intestines. Coarse indigestible or decomposing food may be a cause as well as scybalæ, enteroliths, gallstones or other foreign bodies that may be present in the intestines. Another cause may be given in blood that is toxic from the absorption of poisons, drugs or from infectious disease. Local irritation from disease of other organs of the body, such as the uterus, ovaries, kidneys or bladder, may be a causative factor. Taking cold is a common cause of colic in some persons. (*b*) Proctospasm, or neuralgia of the rectum, is quite common in the neurasthenic or hysterical patient and is often secondary to some rectal irritation, as fissure or fistula. (*c*) Anesthesia. In this condition there is loss of sensitiveness of the intestine to the stimulus of food which ordinarily causes peristalsis. This is quite common in organic brain disease.

(3) *Secretory Neurosis.*—This condition has other names such as mucous colic, mucous colitis, mucous diarrhea, etc. No inflammatory lesions are found. It is supposed to be a functional disorder of a secretory neurosis of the mucous follicles of the colon, causing the secretion of the mucoid substance.

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324 West Forty-sixth Street, New York City.

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**Possible Plague in Topeka, Kansas.**—Dr. Charles Lowry, Secretary of the State Board of Health, has gone to Rice County to investigate the cause of nine sudden deaths among a gang of railroad laborers. Dr. Lowry is particularly interested in the report that the deaths were due to bubonic plague. One physician has pronounced the infection black smallpox. The surrounding territory is in strict quarantine. Every case has proved fatal.

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# THE RATIONAL TREATMENT OF TETANUS: A REPORT OF SUCCESSFUL TREATMENT BY SPINAL SUBARACHNOID INJECTIONS OF ANTITETANIC SERUM.

BY W. H. LUCKETT, B.S., M.D.,
OF NEW YORK;
ATTENDING SURGEON, HARLEM HOSPITAL; CHIEF OF SURGICAL CLINIC, MT. SINAI HOSPITAL DISPENSARY.

PRIOR to the discovery of the *Bacillus tetani* by Nicholaier in 1884, the treatment of tetanus had been empiric and symptomatic. The cultivation of the bacillus in an anaerobic medium by Kitasato in 1891, and the discoveries of Catani, Tizzoni and Behring, were followed by the more rational treatment of tetanus; its serum therapy.

But even this has by no means given entire satisfaction. The subcutaneous injection of the antitetanic serum in 290 cases collected by Moschcowitz gave a mortality of 40.33 per cent. The failure of this method of administering the serum to materially lower the death rate induced Roux and Borrell to make an attempt to bring the serum into more intimate contact with the higher nerve centers, the parts supposed to be mostly affected; thus originated the intracerebral injections. Of 48 cases so treated, collected by Moschcowitz, there was a mortality of 52.08 per cent. This very high mortality is, no doubt, due in part to our rather limited knowledge of the pathological anatomy, and particularly of the pathogenesis of tetanus.

All original observations in this field are by no means concurrent. The most generally accepted view at present points to the motor ganglia of the anterior horns of the spinal cord as being the seat of origin for the tetanic contractions. The more or less constant morphological changes found in these cells of the anterior horns of the spinal cord by Goldschieder and Flatau, both in experimentaly tetanized rabbits, and in autopsies on patients who died from tetanus would seem to substantiate this view.

The cerebrospinal fluid, according to Stintzing, contains a much more active and concentrated toxin than does the blood. He believes that the tetanus bacillus produces toxins at the seat of infection, and that these toxins are carried along the nearest nerves, probably in the interstices of the perineurium and the endoneurium to the spinal cord, and reaching the subarachnoid space of the cord, they produce their toxic effect primarily at the point of entrance into the cord. Moschcowitz also says, "that the point of attack for the toxins is certainly the motor ganglia cells of the anterior horn, which get into a state of increased reflex irritability from the action of the toxins."

Blumenthal and Jacobs made a noteworthy attempt, experimentally, to bring the serum into more intimate contact with the primarily affected parts and the toxins, that is, into the spinal cord and spinal subarachnoid space. They experimented upon tetanized goats, all of which died. The failure probably being due to the small subarachnoid spaces in goats, consequent small amount of fluid, and therefore slow endosmosis. They concluded that by the time the chain of symptoms collectively diagnosed as tetanus had presented, the tetanic poison was so firmly fixed in the central nervous system that it could not be removed, and they furthermore warned against a too hopeful result of the intracerebral method of Roux and Borrell. Jacob, since then, reported two cases of tetanus cured by the injection of the tetanus antitoxin into the spinal subarachnoid space.

Accepting the above rather brief statement as the present view of the pathogenesis of tetanus, and that the primary lesion is in the motor ganglia of the anterior horns and that the spinal fluid contains more highly active toxins than does the blood, then, by ratiocination, we conclude that the spinal subarachnoid injections of the tetanic antitoxin, preceded by the withdrawal of the active and highly toxic spinal fluid is indisputably the rational treatment of tetanus.

With this rather brief résumé, we will report the three following cases:

*Case I.*—P. McB., male, twelve years old, admitted to my service at the Harlem Hospital, July 2, 1902, with the following history: Six days ago received blank cartridge pistol-shot wound in palm of left hand. Was treated in an uptown dispensary, where the wad was presumably removed and the wound thoroughly carbolized with pure carbolic acid. No constitutional symptoms presented until five days after injury, when patient suddenly had a violent attack of dyspnea, followed by slight tremor of left hand and rigidity of muscles of neck and thorax. From the beginning of the attack of dyspnea had constant severe pains in the back and frequent convulsions. Contraction of the muscles of the abdomen and the so-called locking of the jaws were the last symptoms to appear. The period of incubation in this case was evidently five days.

Examination showed a well-developed lad; heart and lungs normal; urine negative. Palm of left hand presented small, round wound, between the first and second metacarpal bones, edges powder-burned. Bottom of wound grayish in color, from which a very small amount of pus could be expressed. No inflammatory reaction surrounding the wound. Accepting Rotter's subdivision of tetanus, would put this case in Subdivision B—a grave case.

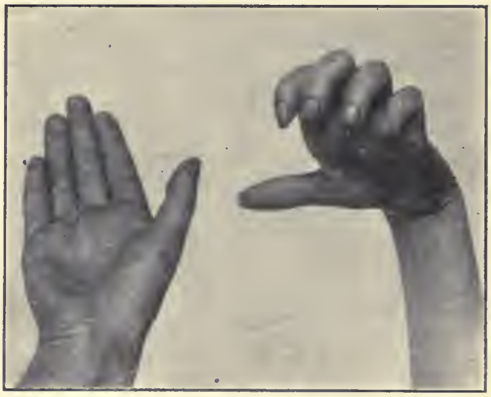
Convulsions one after another, and most violent, particularly the muscles of respiration, diaphragm and abdomen. The admission temperature of 98° F., pulse 104, respirations 22, rapidly rose in 24 hours to temperature 106° F., pulse 112, respirations 38 (pulse and respirations counted between the convulsions), and the patient died in the most violent tetanic spasms, particularly of the muscles of the chest. In fact, a member of the House Staff remarked that these contractions were so strong that they simply "squeezed the life out of him." This expression is also used in Allbutt's "System of Medicine," and is not to be wondered at, since they have been so strong as to cause a rupture of the rectus abdominalis and psoas magnus. Indeed, a case has been reported in which both femurs were fractured by the force of contracting muscles in a case of tetanus, and another in which the second cervical vertebra was dislocated. The diagnosis in this case was confirmed by Dr. Harlow Brooks, Pathologist to the Hospital, who succeeded in finding a very few tetanus bacilli in a culture taken from the wound.

Treatment: Wound freely opened, and swabbed out repeatedly with pure carbolic acid. Wet dressing applied. Bromides and chloral freely administered. Forced nutrition and stimulation. Hot packs and prolonged hot baths. In fact, he received the useless, empiric and symptomatic therapy usually exhibited in such cases.

This case is reported in contrast to Cases II and III, and in order to emphasize a protest against the useless and sometimes reckless and dangerous employment of potassium bromide and particularly of chloral hydrate; especially against their continued use in cases of tetanus when it is clearly seen that they are absolutely of no avail. They may alleviate the distress, but they do not modify the progress of the disease.

*Case II.*—Male, twelve years old; admitted to my service at the Harlem Hospital, July 12, 1902. Family and personal history negative. Previous history: Diphtheria and scarlet fever six years ago. He received a blank cartridge pistol-shot wound in palm of left hand July 4. The wound had been cleaned and a wet dressing applied at an uptown dispensary. No constitutional symptoms developed until the seventh day, when the child complained of stiffness in the jaw, pain in the back of the neck and right side of chest. Admitted to the hospital on the following day.

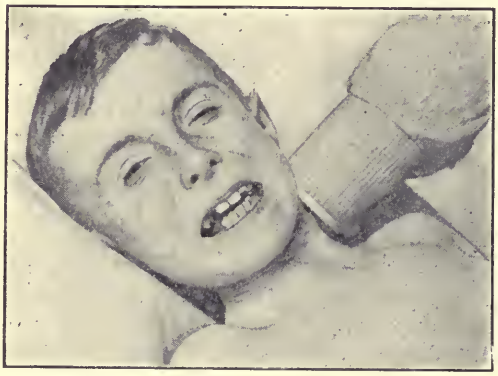
Fig. 1.



Case II. Tetanus.—Wound, left palm between second and third metacarpi. The claw-like contraction of fingers is known as "local" contraction or tetanus, and is rarely observed in tetanus. It is not due to an infectious cellulitis nor synovitis.

Examination: Well-developed lad, with heart and lungs normal. Small, round wound in the center of palm of left hand, midway between the second and third metacarpal bones, grayish in color. Edges powder burned. Discharge scant. Most noticeable feature about this hand was the claw-like contraction of all the digits except the thumb, which was in a state of hyperextension, and flexion of wrist on the forearm. This condition was not due to any inflammatory changes (see Fig. 1). There was no cellulitis or tenosynovitis present. It was due, however, to the so-called local effects of the poison, and is not ordinarily observed in cases of tetanus. If present at all, it does not usually last long after its first manifestation, and it thus frequently escapes observation, but in this case it continued for two weeks. Jaws firmly set; Risus sardonicus present. Muscles of the abdomen in state of constant tonic contraction. There was also present in this case marked tonic contraction of the obicularis palpebrarum, the sphincter muscle of the eyelids (see Fig. 2) from photograph taken on the fifth day after injection). Although the patient is making a great effort to open both eyes and mouth, the left eye is only partially open, the mouth only slightly so. The jaws had somewhat relaxed when photographed. Notice, also, the contractions of the muscles of the neck. They are very rigid, but no opisthotonos present. The shoulders are raised from the bed by the nurse's hand placed at back of head.

Fig. 2.



Case II. Tetanus.—Showing tetanic contraction of cervical muscles, muscles of the jaw and the orbicularis palpebrarum (left eye nearly closed). Antitoxine rash on face. Teeth extracted to insert feeding tube. [Photographed on fifth day after injections of antitoxin.]

When admitted, his temperature was 101° F., pulse 116, and respirations 24. The highest temperature, reached on the third day, 104° F., became normal on the tenth day. Frequent examination of pus by Dr. Brooks failed to reveal the *Bacillus tetani,* but the clinical diagnosis, however, was undoubtedly that of tetanus.

Treatment: In order to give the serum therapy as fair a chance as possible, strict orders were given that no other treatment was to be employed, but, due to a misunderstanding, the wound was swabbed out with pure carbolic acid, once only, which probably partly accounts for the failure to discover the bacillus. Under careful asepsis, a lumbar puncture was made between the third and fourth lumbar vertebræ, 20 minims of the cerebrospinal fluid were withdrawn, and 8 c.cm. of the antitetanic serum were injected into the spinal subarachnoidean space. The injection was made very slowly, consuming about five minutes in time to empty the syringe. There were absolutely no ill effects. On the contrary, after a few minutes the tonic contractions all over the body diminished, and were followed by rest and sleep. Pains in the back of neck ceased. Slight relaxation of the muscles of the jaw, but not enough for mastication, or even to drink from a cup. This remission of the tonic contractions and convulsions lasted about six hours, when the spasms again set in, and the patient had intense headaches. In another hour, the pains were as severe as preceding the injection, especially in the dorsal region and in the abdomen, which was so contracted as to present the boat shape of cerebrospinal meningitis. This would last less than five minutes, when it would partially relax. On the following day, July 13, another lumbar puncture was made, 12 minims of spinal fluid withdrawn, and 11 c.cm. of serum injected, followed by rest, remission of contractions, less pain, etc., as after the first injection. In fact, the patient received daily spinal subarachnoid injections for eight days, all between the third and fourth lumbar vertebræ, as follows:

July 12—22 drops cerebrospinal fluid withdrawn; 8 c.cm. tetanus antitoxin injected.
July 13—12 drops cerebrospinal fluid withdrawn; 11 c.cm. tetanus antitoxin injected.
July 14—5 drops cerebrospinal fluid withdrawn; 12 c.cm. tetanus antitoxin injected.
July 15—40 drops cerebrospinal fluid withdrawn; 10 c.cm. tetanus antitoxin injected.
July 16—2 drops cerebrospinal fluid withdrawn; 12 c.cm. tetanus antitoxin injected.
July 18—None withdrawn; 12 c.cm. tetanus antitoxin injected.
July 19—35 drops cerebrospinal fluid withdrawn; 12 c.cm. tetanus antitoxin injected.
July 24—45 drops cerebrospinal fluid withdrawn; 15 c.cm. tetanus antitoxin injected.

making a total of 161 drops of cerebrospinal fluid withdrawn and a total of 92 c.cm. of the tetanus antitoxin injected.

On July 26, the patient sat up in bed for two hours; was out of bed on July 28, and on July 29 could open mouth as normal, complete relaxation of all muscles. Was discharged from the hospital, cured, on July 30.

*Case III.*—W. B., male, ten years old. Family and previous history negative. Admitted to the Harlem Hospital, September 10, 1902, on the service of Dr. Haubold, who kindly permits me to report the case, as it was treated according to our observations in Case II.

Present History: Seven days ago, while attempting to vault the garden fence, fell and cut left wrist on the neck of a broken bottle. Was treated at an uptown dispensary, where several sutures were taken in the wound and a wet dressing applied. Five days after injury had severe abdominal pains. Applied to an uptown hospital for admission and was refused. Was seen on the night of the sixth day after injury by Dr. Bivings, House Surgeon of the Hospital, who diagnosed the case as tetanus, and injected 12 c.cm. of tetanus antitoxin, after withdrawing 125 drops of the cerebrospinal fluid. As the tonic contractions were most marked in the muscles of the abdomen, I believe from the history that the period of incubation was five days, as it was on the fifth day after injury that the patient first complained of the severe abdominal pains which were undoubtedly caused by tetanic contractions. The symptoms in this case, like Case II, were those of Rotter's Subdivision B—a grave case. Without going into further details this case received spinal subarachnoid injections as follows:

Sept. 9—125 drops of cerebrospinal fluid withdrawn; 12 c.cm. tetanus antitoxin injected.
Sept. 10—100 drops of cerebrospinal fluid withdrawn; 9 c.cm. tetanus antitoxin injected.
Sept. 11—125 drops of cerebrospinal fluid withdrawn; 14 c.cm. tetanus antitoxin injected.
Sept. 13—115 drops of cerebrospinal fluid withdrawn; 12 c.cm. tetanus antitoxin injected.
Sept. 15—140 drops of cerebrospinal fluid withdrawn; 12 c.cm. tetanus antitoxin injected.

making a total of 605 drops of cerebrospinal fluid withdrawn and a total of 59 c.cm. of tetanus antitoxin injected.

The reaction after each treatment in this case was more positive than in Case II, followed immediately by a cessation of convulsions, relaxation of contracted muscles, etc. The patient sat up in bed September 22, and was discharged, cured, September 26.

Prognosis in this case was, if possible, more grave than in Case II, yet recovery was most satisfactory under injections of only 59 c.cm. of the antitetanic serum, 33 c.cm. less than in Case II, but we withdrew 444 drops more of the highly toxic spinal fluid than in Case II. In short, I believe that the indication is to withdraw as much of the highly toxic spinal fluid as possible.

In tetanus there is a marked, most rapid wasting and exhaustion. This wearing out of the physical powers, this body weakness, seems to constitute an important and very grave feature of the disease, which, directly or indirectly, seems to aid in producing a fatal ending. Now, the process of alimentary absorption, assimilation and elimination, apparently, are not in the least interrupted nor interfered with. The involuntary muscles of the stomach and intestines are not subjected to the same violent tetanic contractions and spasms as are the voluntary muscles. The indication, therefore, is very strong and positive for urgent and forced nutrition and stimulation.

Cases II and III each received daily from 50 oz. to 100 oz. of fluids by mouth, per tube passed through space created by extracting teeth, or through nose, or per rectum, of milk, gruel, beef juice, orange juice, rice cooked until it could be sucked through tube, and bananas, cut into very thin slices and forced between the teeth.

The antitoxin used in both cases was that of the Board of Health of New York, the immunizing power of which is at least one to fifty million, and 14 consecutive spinal subarachnoid injections, without an infection or complication of any kind bespeaks a perfectly sterilized product, and demonstrates the safety of this method of treatment in trained hands.

In the course of the observation and treatment of these cases, I came to the following conclusions:

1. As no attempt was made to maintain an equation between the amount of spinal fluid withdrawn and the amount of serum injected, that the shock or collapse so often observed following spinal subarachnoid injection of cocaine for anesthesia is not due to an upsetting of the equilibrium of the pressure in the spinal canal, as is claimed by the advocates of this method of producing anesthesia, but is due solely to the physiological action of the cocaine.

2. Given a wound infected with tetanus, I am by no means positive that the anatomical seat of the wound does not play an important rôle in the production of the constitutional symptoms of tetanus, for, again accepting the present view of the pathogenesis of tetanus, any wound infected with tetanus near a large nerve will be more likely followed by constitutional effects of the infection than a wound anatomically remotely removed from the seat of a large nerve. It is possible, therefore, that the space in the palm of the hand, between the first and second metacarpal bone, *is a favorable point for an infection of tetanus to produce constitutional effects,* because the median nerve in the hand becomes flattened out and much larger at this point; it therefore offers an increased surface with greater facilities for gathering and conveying the toxins to the cord.

3. While I recognize the absurdity in trying to draw conclusions from two cases, the reaction after each injection was so prompt, and improvement so positive, and followed by final cure in both grave cases, that I am constrained to state that I believe in the spinal subarachnoid injection of the tetanus antitoxin, preceded by the withdrawal of the active, concentrated, highly toxic spinal fluid, supplemented by forced nutrition and proper care of wound, we have at least the promise of a method of treatment of tetanus by means of which we can offer more hope in this fatal and rightly most dreaded disease than we have been able to, heretofore.

## NOTES ON SYSTEMIC INFECTIONS BY THE STAPHYLOCOCCUS AUREUS.

BY E. LIBMAN, M.D.,
OF NEW YORK.

In the following remarks I intend to make a report of all the blood cultures in which I have found the *Staphylococcus aureus.* These investigations extend over a period of five years. It had not been my intention to speak on this subject at the present time, but the skepticism which was manifested at the last meeting of the Society has led me to make this report. During the course of my remarks I shall refer to a number of interesting details concerning the cases under discussion; but my main object will be to show that in every case in which I found the *Staphylococcus aureus* in the blood during life, the finding was confirmed. I shall not refer at length to the question of whether the *Staphylococcus albus* occurs in systemic invasions or not. Up to the present time it has been my experience that it occurs in the blood only as an agonal invader, as I have not yet had a case in which I have found the *Staphylococcus albus* in the blood during life and been able to confirm the finding by discovering the same organism in any metastatic focus.

It is of course very important to differentiate the staphylococci found in the flasks and plates. Tubes showing staphylococci should be removed from the thermostat after twenty-four hours and observed for a number of days. Sometimes the aureus color does not develop for several days. Furthermore, it is well to transplant the colonies on to potato, serum-agar, and ordinary agar, particularly if sugar media have been used.

As to the technic I shall be very brief, as I expect to go into this subject on another occasion. The upper arm is constricted by means of a bandage; the anterior aspect of the elbow is then scrubbed thoroughly for from three to five minutes with green soap and water, then rubbed with ether, alcohol and 1 to 500 bichloride. The syringe and needle are boiled at the bedside and the needle is used while still quite warm. If through some delay or difficulty the needle has become cold, it is rapidly passed through the flame to avoid all danger of contamination. Part of the blood is put into flasks and the remainder is plated. The media most commonly used are serum-glucose-agar, serum-glucose-bouillon, and the ordinary media.

Among the following cases there will be found a number of instances of osteomyelitis. It is essential of course to remember that we must look upon the osseous foci in these cases as metastatic deposits, and we must also bear in mind that these cases, particularly of multiple osteomyelitis, are especially seen in children. Jordan has very well called the condition "the septicemia of adolescence." In other words, children with systemic *Staphylococcus aureus* infection are apt to have the bones involved, whereas adults with a similar infection are more liable to have other forms of metastatic lesions. So that the cases to which I refer of this nature are to be looked upon simply as a form of sepsis, the primary focus of which in many of the instances cannot be determined; and for that reason it is not possible in a number of the cases to report the findings in the primary focus.

I believe it is best in speaking of septic cases, to divide them into cases of local infection without bacteriemia and cases of local infection with bacteriemia with or without metastases. However, in describing my cases I shall for the sake of brevity use the word "septic" in its clinical sense. I wish simply to indicate that the patients had suffered from symptoms which are clinically considered suspicious of pyogenic infections.

In the notes on my cases there will be found a number of reports on the bacteriology of the urine. These, while unnecessary in many of the instances to confirm the blood culture, are of great interest in demonstrating one of the methods by which bacteria leave the body. In a few of the cases, besides finding the *Staphylococcus aureus,* we also obtained a few colonies of albus. To the latter no importance must be attached as it is a normal inhabitant of the urethra. In the later investigations a double catheter was used (according to Melchior) and with this the results were more satisfactory.

The cases of which I wish to present the notes are the following:

*Case I.*—March 13, 1898. Osteomyelitis of the tibia; culture, *Staphylococcus aureus;* two days later the blood showed this same organism. The patient died three days later and at the autopsy, made ten hours post mortem, the staphylococcus was found in the heart blood, in an empyema, in infarctions of the lung, in an area of pneumonia, and in an abscess of the kidney.

*Case II.*—This case was reported in detail by Dr. Brill and the writer several years ago. The first bloodculture showed *Staphylococcus aureus;* the second blood culture made several weeks later (two days before death) showed the *Bacillus pyocyaneus.* At the post mortem examination the *Staphylococcus aureus* was found in a metastatic abscess in the right vastus externus muscle, and the *Bacillus pyocyaneus* in the viscera.

*Case III.*—*Staphylococcus aureus* isolated from osteomyelitis of the tibia; three days later the blood showed *Staphylococcus aureus.* The same organism was cultivated from the heart blood and from miliary abscesses of the lung, post mortem.

*Case IV.*—Case of carbuncle of the neck with supposed diabetic coma. Blood culture, *Staphylococcus aureus.* Post mortem, staphylococcus cultivated from miliary abscesses of the lung; organism also found in spreads.

*Case V.*—March 30, 1899. *Staphylococcus aureus* reported as being present in the blood. The patient was operated upon the next day for osteomyelitis of the femur. The same organism was found in the bone focus and again in the blood on the same day.

*Case VI.*—This case is one of the most interesting in the series. The primary focus was an osteomyelitis of the femur. The culture sent down from the operating room showed no growth. (This observation is of no significance as the cultures at the time were usually made by an inexperienced helper in the operating room, who either used the loop too hot or did not succeed in planting the material on the agar.) The blood on the day of admission showed the *Staphylococcus aureus;* two days later the same finding was made; three weeks later the urine showed a pure culture. On two occasions after that it showed no aureus. Suspecting that there might no longer be bacteria present in the blood, a blood culture was made several days later and the blood was found to be sterile. The patient recovered.

*Case VII.—Staphylococcus aureus* found in the blood and in an osteomyelitis of the left tibia, also in some pus in the right ankle. Post mortem, *Staphylococcus aureus* in the spleen, lungs and heart blood.

*Case VIII.—Staphylococcus aureus* present in the blood, also present in metastatic foci in the skin. A culture from the foci in the femur and tibia showed the same organism. Patient died; no autopsy.

I wish here to refer a little more in detail to the cutaneous lesions which I have seen in a number of cases of osteomyelitis due to the same organism. I have not seen them with other infections, although there is no reason why they should not occur. These lesions may be manifested over the skin of almost the entire body, but are particularly apt to occur in the scalp. They consist of numerous miliary abscesses in the skin with little or no inflammatory reaction. I have not seen similar lesions in any other form of disease. In every case in which they have been noted there has been present a bacteriemia.

*Case IX.—Staphylococcus aureus* found in the blood; later in the bone marrow of the femur and in the lesions in the scalp and right leg. Patient died; no post-mortem examination.

*Case X.*—Case of osteomyelitis of the femur. *Staphylococcus aureus* cultivated from the blood and from a metastatic abscess of the side of the face. Patient died; no post-mortem examination.

*Case XI.*—Osteomyelitis of the tibia; *Staphylococcus aureus* obtained on two occasions from the blood and from a focus in the tibia. Two weeks later pus was aspirated from the pericardium which contained the same organism pure. Patient died; no post-mortem examination.

*Case XII.*—Case of post-partum sepsis. It is a common belief that these cases are always instances of streptococcus infections. In the literature there are reported five or six cases in which the *Staphylococcus aureus* was the infecting agent. In my series I have two such cases. In this case the *Staphylococcus aureus* was cultivated from the blood on January 30, 1901; a week later it was again found in the blood; still one week later the urine was examined and found sterile. A blood culture taken on the following day remained sterile, and the patient recovered.

*Case XIII.—Staphylococcus aureus* found in osteomyelitis of the tibia on February 16, 1901. Five days later the same organism was found in the blood and three days later in the urine. Twelve days later the same organism was found in another focus in the tibia. A blood culture made the next day remained sterile. Patient recovered.

*Case XIV.*—A case of osteomyelitis of the right femur. (Patient came in too bad a condition for operation.) Hundreds of colonies of the *Staphylococcus aureus* were isolated in 5 c.c. of blood and the same organism was found in pus aspirated from an abscess probably arising in the thyroid. Patient died; no post-mortem examination.

*Case XV.—Staphylococcus aureus* found in the blood and in a large area of cellulitis in the right arm. Patient died; no post-mortem examination.

*Case XVI.—Staphylococcus aureus* found in the blood eight days before death and again seven days before death On post-mortem examination a fibrinous area found in the wall of the right ventricle showed staphylococci in spreads and the *Staphylococcus aureus* in pure culture. The same organism was isolated from miliary abscesses of the heart wall, kidney, and from infarctions in the spleen. It was also present in spreads and cultures in submucous abscesses of the colon.

*Case XVII.—Staphylococcus aureus* found in the blood; later in metastatic abscess of the thigh, and in the urine. Two weeks later blood culture negative. Recovery.

*Case XVIII.—Staphylococcus aureus* found in the blood, in osteomyelitis of the humerus, and in scalp lesions. Patient died; no post-mortem examination.

*Case XIX.*—This patient was admitted suffering from sepsis supposedly secondary to an abscess of the foot. On the day after admission one colony of *Staphylococcus aureus* was found on one of the plates. (12 c.c. of blood had been obtained; 7 c.c. being used for the flasks and 5 c.c. for the plates.) Subsequently the *Staphylococcus aureus* was isolated from a metastatic abscess over the left trochanter, from the urine, and from an abscess in the right vastus externus. The patient was subsequently operated upon for an abscess of the right kidney and the same organism obtained. Patient died; no post-mortem examination.

*Case XX.—Staphylococcus aureus* found in the blood and in an osteomyelitis of the humerus.

*Case XXI.*—This was one of the cases of endomyocarditis shown at the last meeting. The first blood-culture was negative. In the second blood-culture 15 c.c. of blood were used and the *Staphylococcus aureus* was found in one of the flasks. At the post-mortem examination the same organism was cultivated from the heart blood and from the center of the vegetations.

*Case XXII.*—Case of the post-partum sepsis. *Staphylococcus aureus* found in the blood the day after admission, and two days later found pure in the urine. Subsquently it was isolated from a pus kidney on the right side and again from the urine. A later blood culture was negative. Patient recovered.

*Case XXIII.—Staphylococcus aureus* found in the blood and later in an abscess over the left hip-joint. Subsequently it was found in the urine twice and in the blood once. At the post-mortem examination the organism was isolated from an abscess of the sclera of the left eye, from a periarticular abscess over the shoulder, from an abscess cavity in the dorsal region leading to the vertebræ, from an abscess under the left pectoralis major, from a purulent pericarditis and from purulent infarcts of the kidney.

In these 23 cases in which I have found the *Staphylococcus aureus* in the blood during life the finding has been confirmed in every instance. In 330 other blood cultures I have never found a single colony of the *Staphylococcus aureus.* I think then that in these cases there can be no doubt as to the validity of the blood findings.

It will be noted that out of the 23 cases five recovered. It is generally considered that the more bacteria there are found in the blood the less chance there is of recovery. This does not necessarily hold good. The number of bacteria found depends, in some cases at least, upon the time at which the examination is made, as the great tendency is for the body to rid itself of bacteria and for metastases to be established. The blood cultures in the fatal cases under discussion were made at periods varying from one to nineteen days before death. The reports could usually be handed in within twenty-four hours. Sometimes colonies were seen after six or eight hours. In some instances the report was delayed several days as the organism was very slow in developing its typical color.

I wish to thank the members of the medical staff of the Mt. Sinai Hospital through whose great kindness I have been enabled to carry on these studies.

## ITCHING: ITS OCCURRENCE BOTH AS A CONCOMITANT AND AS A CAUSE OF DISEASE.[†]

BY EDWARD BENNET BRONSON, M.D.,

OF NEW YORK.

IN a study on "The Sensation of Itching,"[*] made some years ago, I endeavored to show that this most common form of paresthesia had its source in the epidermis; that it concerned those simple nerve endings that exist abundantly in the epidermis and whose function can be traced phylogenetically to the earliest periods of animal life. There was at first, in the very early creations of the animal kingdom, merely a general sensitive exterior, capable of reacting to contacts with the external world. This was the primitive sensorium. At this early stage it consisted solely in the sense of contact. Out of this primordial sense-organ, through adaption and differentiation, were gradually evolved, not only the various organs of special sense, but the whole complex nervous system of the highest order of animals. But the simple sense of contact was still retained, little changed in character from its original form. It is a very different thing from the sense of pselaphesia, commonly called the sense of touch, which is a highly specialized sense, and doubtless dependent upon specially adapted nerve organs.

I believe that it is disturbance of this sense of contact that is the cause of the sensation of itching. That it is the most superficial nerves of the skin that are involved is evidenced by the fact that it occurs only when the disturbance takes place in the epidermis. This is true both of evanescent itching in health, which is produced by the lightest contacts only or by irritants that simply act on the epidermis, and also in diseases of the skin, of which it is never a concomitant unless changes affect the same superficial layer. Connective tissue diseases do not itch, even though superficially located. Syphilis of the skin does not itch, except in those rare cases where the early erythematous eruption is attended with urticarial manifestations (Roseola urticata) or occasionally, though very rarely, when pustular lesions invade the epidermis. Lupus does not itch, nor lepra, nor sarcoma of the skin, nor epithelioma. While epithelioma is, in a sense, an epidermic disease, it should rather be regarded as an abnormal invasion of the epidermis into the connective tissue. So long as the epithelial cells remain within their natural boundaries, they are comparatively normal, but the disease proper begins and the cells assume pernicious character only after they have broken through these boundaries, invading a foreign soil.

Mycosis fungoides is an affection closely allied to sarcoma and yet is a pruriginous disease, but its lesions are much more superficially located than those of sarcoma. They occur not only in the papillary layer, but tend to involve secondarily the epidermis, producing effects closely resembling those of eczema. Hence it is that in this disease itching is a characteristic and often a distressing symptom.

The common vasomotor affections of the skin are not associated with pruritus unless the epidermis be implicated in some definite and particular manner. When, however, from any cause itching does occur, the vascular or inflammatory excitement would naturally tend to make it worse. An erythema or any erythematous disease is not *per se* a pruriginous one. The morbid sensation is more apt to be of a smarting or burning character—a sensation that is more closely allied to pain, which belongs to the domain of "common sensation," while that disturbance of the contact sense we call itching is one remove from it. Like pain, smarting is antipathic to itching, and tends to extinguish it. The instinct is to sooth the part, rather than to scratch it. The instinctive impulse in scratching is to attack and remove an irritating something that is vexing the sense of contact.

There is an adumbration of temperature sense in the smarting and burning sensations. To the discriminating sense of temperature smarting of the skin bears perhaps a relation similar to that of itching to the sense of touch, but its mode of production is different, nor is its seat the same. Such disturbances of the epidermis as suffice to produce itching evoke no burning or smarting sensations. These require for their production contacts that are more decided or disturbances that are deeper down.

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[†] Read before the Society of the Alumni of Bellevue Hospital, January and March, 1903.

[*] Medical Record, Oct. 18, 1890.

When pruritus is associated with vasomotor affections of the skin, it is very frequently due to the fact that an element of urticaria is present. Clinically the combination of urticaria and an erythematous affection is by no means rare. Urticaria is liable to occur in nearly all irritative affections where there is hyperesthesia, whether from external irritants or from reflex irritations or from cutaneous inflammatory disease. It is observed occasionally in neurotic or very irritable eczemas. Not always are there well developed wheals, but here and there papules will form that show the peculiar blanched ischemic surface that is so characteristic of urticaria. The production of the wheal is due to something beside the ordinary processes of vasomotor disturbance. Its most important factor is a disorder affecting the unstriped muscular fibers of the skin and its blood vessels. According to Unna, the trouble begins in a spastic contraction affecting the veins, which, preventing the escape of blood, causes the serious affusion and circumscribed edema. A similar contraction of the arterioles accounts for the ischaemia and finally the spasm of the arrectores pilorum, acting as it would upon the highly sensitive root sheaths of the hairs partly, at least, accounts for the itching. Scratching, by increasing the local erethrism of the wheal, always aggravates the condition and makes the itching more intense.

It is a fact that in a number of papular, pruriginous diseases of special type, such as lichen planus, prurigo and others, hypertrophy of the arrectores, as shown by the microscope, is commonly present, and it is a fair inference, I believe, that hyperkinesis of these muscles has no slight bearing in such cases on the pathogenesis of the itching. The sensibility of the hairs to contact and the readiness with which itching is produced by such contacts are matters of common observation.

General speaking, pruritic affections are more common in hairy regions than elsewhere. They affect the hairy, outer aspects of the extremitus more often than they do the less hairy, inner ones, or the comparatively hairless flexor surfaces of the joints.

Of course, this does not apply to diseases in which the pruritus is directly due to trophic, epidermic changes. Eczema, for example, is rather apt to affect the flexor surfaces, which, being more vulnerable, more susceptible to injury from the nails, are favorite seats of eczematous inflammation. Of all the inflammatory pruriginous diseases, eczema is the one in which trophic changes in the epidermis are most pronounced and obvious. Its distinctive pathological feature is the process of vesiculation, which, located as it is, in the prickle cell layer, is the essential cause of the itching.

Most of the inflammatory vesicular and bullous diseases are more or less pruritic if the lesions are situated in the prickle cell layer. When, as in sudamina, the lesions occur at a higher level itching is absent. The herpetic and pemphigoid affections are all more or less pruriginous. That this is in less degree true of zoster doubtless finds its explanation in the fact that, being a decidedly neuritic disease, the sensation most prominent is a painful one, which would dominate, and considerably annul any sensation of itching. The same is true of a blister from a vesicatory.

Itching is not always a concomitant of epidermic disease. Whether it occur or not depends upon the character of the changes and the manner in which they take place. When they have been effected with a certain rapidity and are more or less acute in character pruritus almost always results. But when they develop slowly, without sudden disturbance of the nerves, which are then able to adjust themselves to the altered relations, there is rarely any itching. Thus anomalies of growth do not itch. In psoriasis, though usually classed with the pruriginous diseases, when its pathological process is of an indolent character, pruritus is often insignificant. The same is true of eczema seborrhoicum. Usually, parasitic diseases do not itch, unless complicated with eczematous inflammation.

But, as we are well aware, morbid itching may occur without any obvious disease of the epidermis, without any trophic disease in the skin whatsoever. When excessive and apparently spontaneous, we call it *Pruritus essentialis*. It may affect some circumscribed area, like the extremitus, the palms of the hands, the scalp, the vulva, the anus, sometimes the roof of the mouth or the tongue. For the lining membrane of the mouth, inasmuch as it is derived from the same ectodermic layer as the common integument, shares with the latter the sense of contact. Again, the pruritus may be generalized over the entire surface of the body. The circumstances under which it occurs are exceedingly varied and tolerably familiar. We know that it may be associated with toxic conditions in the economy, with the phenomena of reflex irritation, with neurotic conditions and disorders of the nerve centers. We may vaguely refer it to arthritism, to neurasthenia, hysteria, toxemia, or to some special physiological condition like pregnancy, to the presence of a tumor, to indigestion, or, finally, to the marasmus of old age. But there must be an intermediary. The *tertium quid* remains unsolved. Why, for example, should gout or neurasthenia in certain cases find the nerves of contact or their controlling centers especially susceptible more than any others? There can be little doubt that the central nervous system comprises centers of control for the skin, and what is more for all its peculiar activities and special functions—a field of inquiry too little explored for us to venture upon it. Even were it possible, however, to apportion the degree of influence due on the one hand to disorder of these centers and on the other to the local susceptibility of the skin, the difficulty of finding the prime determining factor in pruritus essentialis would still remain.

Probably in most cases this determining factor resides in the skin itself. Every case of pruritus, whether symptomatic of some local disease or essential is associated with hyperesthesia. In essential pruritus this preliminary hyperesthesia is probably more or less general. Something happens to make it operative only in the nerves of contact. It is seldom that morbid itching at the very outset is absolutely spontaneous. There is almost always, if not invariably, some exciting cause, of however trifling a nature it may be. So long as the nerves of contact are left undisturbed they remain quiescent, but, subject as they are to the general irritability, it needs but the slightest touch to set them in commotion. Contacts, that under ordinary circumstances would be unperceived or imperceptible, the friction of the clothing, an unconscious movement in bed at night, a breath of air, throws them into sudden alarm. The instinctive response is the impulse to scratch. Each point of contact becomes the center of refluent waves of irritation, that spread in widening circles, encountering other circles from other points of irritation, till, finally, the whole cutaneous surface is aflame with furious itching. The perverted sensation once aroused, a reciprocal relation between the cutaneous nerves and the nerve centers causes the one to react to the other, like the oscillations of a pendulum. Irritation in one is reflected to the other, then back again, always in an exaggerated form, and the process thus set up goes on with continually accelerating force.

Often, it may be that there are more definite grounds for assigning the initiative in pruritus to the cutaneous nerves. The common assumption, however, that in the toxemias, in icterus, uremia, diabetes mellitus or lithemia or in the poisoning from drugs like opium and belladonna, the itching that occurs is necessarily due to the direct action of the toxic matter circulating through the skin is not well established. Without doubt there is such a thing as toxic pruritus. But is it toxic always in the sense that the cutaneous nerves are irritated directly, or may it not be that the irritation is transmitted to them secondarily from irritated nerve centers? As the skin is an emunctory organ, toxic substances are doubtless eliminated through it, and in the act of elimination would be apt to cause irritation in the skin. Inflammatory changes often imply such an effect, as in the acute exanthema and probably in many other affections of the skin. But when the only evidence of irritation is in the sensory nerves, it would be quite as simple to refer it to the toxic effect on the nerve centers as to the direct effect on the nerve terminals.

The action of cold is sometimes attended with morbid itching. Occasionally, it takes the form of urticaria. A sudden change to cooler weather, especially cool, damp weather, even the application of a cold, wet cloth to the skin, suffices to develop this peculiar manifestation. This idiosyncracy, however, is rare. Without urticaria cold water, or, more commonly, the cold bath will cause, in some individuals, usually those of highly nervous temperament, an intense itching that may last for several hours. To such the bath becomes a veritable penance.

*Pruritus hiemalis* is another form in which the sensitiveness of the skin to cold shows itself. It begins usually at the outset of cold weather in the late autumn and may continue throughout the winter. It comes on most severely toward night, and, gradually increasing in intensity, it may rob the sufferer of sleep. The extremities, particularly the lower, are more often affected than the trunk, and not infrequently eczema and other trophic changes may be the consequences of the scratching.

In all these cases there seems to be a curious interaction between disturbances of the temperature sense and of the sense of contact. It is not impossible that the intermediary is the motor disturbance already alluded to as a prominent factor in the itching of urticaria. In all of the cases, moreover, the element of hyperesthesia is clearly in evidence and plays a most important part.

In this connection may be mentioned another form of paresthesia relating to the temperature sense, namely, the sensation of burning or *causalgia* that sometimes occurs without the slightest discoverable trophic change in the skin, or any objective change in temperature. It is observed in gouty subjects, the aged, and in those suffering from central nervous disease. It usually comes on at night, like pruritus hiemalis, but only after the patient has been some time in bed, and often becomes so annoying as to cause an irresistible desire to throw off the bed clothes and expose the burning surfaces to the air. That it is allied to the itching sensation is shown by the fact that pruritus not infrequently precedes or follows it. Though the essential predisposing cause is presumably internal, the warmth of the bed is the exciting cause, while hyperesthesia does the rest.

In some of its manifestations there is very conclusive evidence that pruritus may occur as a sympathetic disturbance in consequence of some more or less remote disorder of the interior. This is reflex pruritus. Familiar instances are the itching of the anus or nasal orifices from ascarides in the rectum, of the end of the penis from stone in the bladder, of the vulva from diseases of the internal genitals or from the pregnant uterus. It occurs as the concomitant of tumors in the interior of the body, more especially of malignant growths. Thus Blaschko describes a case of severe and long-continued pruritus over the whole body that was associated with a lymphosarcoma the size of the fist in the supraclavicular region, and which disappeared completely and at once as soon as the tumor was removed. One of the most aggravated cases of general itching in my experience was in a patient with carcinoma of the intestines, involving the lower wall of the stomach. In such cases, however, it is doubtful whether the pruritus be reflex or toxic and due to the absorption into the system of septic matter. The cause is equally obscure when occurring in Hodgkin's disease and in some forms of leucemia.

Sometimes pruritus occurs as a pure neurosis. It may affect the distribution of a single nerve, as in the case of Crocker's, where it was confined to the region of the sciatic. It may be a symptom of hysteria or of neurasthenia. Sexual neurasthenia is sometimes the only discoverable cause of pruritus ani or pruritus progenitalis.

Itching may have a psycho-sensory origin. As true of all the sensations and higher perceptive senses as well, it may respond to pure mental suggestion. The medical student, if he be rather impressionable, on first encountering a case of pediculosis at the clinic, will hardly escape a creepy sensation in his skin, the effect of pure dread and aversion. There is a class of well-recognized cases in which this feeling of apprehension comes finally to be associated with delusions or hallucinations. The person has a settled conviction that there are lice on him. He even sees them emerge from the pores. He brings them to exhibit to the doctor, who finds nothing but little rolls of epidermis that have been scratched from the skin, and not a sign of pediculosis. Usually, in such cases, abundant scratch marks testify to the reality of the itching, and there may be evidences of secondary eczema or urticaria. In one case it was not lice that the patient saw, but some fine, dust-like material that escaped from the skin, or would come in clouds from the mucous orifices, accompanied always by intense itching. Such cases, of course, imply aberration of mind, but it will generally be found that some sort of irritation of the skin long preceded the mental derangement. Though perhaps there was a precedent condition of irritability throughout the nervous system, there occurred some accidental irritation of the skin, possibly at one time a real pediculosis, which gave the pendulum its first impulse and the continued reactions between the nerve centers and the cutaneous periphery ended by causing disastrous effects in both.

The principle illustrated above is applicable to nearly all the pruriginous diseases. Whether pruritus be the first symptom or not, it always becomes an element of aggravation to the disease. Though it may not be the prime etiological factor, it is at least an "accessory after the fact," and oftener, I believe, than is commonly recognized, is it the primary factor.

We have referred to pruritus ani and pruritus vulvæ, as sometimes the result of reflex irritation—an irritation reflected from neighboring or adjacent parts. But these affections (or rather the hyperesthesia which is always the essential precursor) are often dependent on conditions much more general and remote, a gouty diathesis, for example, or neurasthenia. Now it often happens in such cases that in consequence of the rubbing and scratching of the parts, a catarrhal inflammation is produced—an eczema of traumatic origin. The physician, seeing such a case for the first time, is apt to attach undue importance to the eczema and to look upon the itching as only its symptom. To be sure, there is no special reason why an eczema should not occur in these situations, as well as elsewhere. But it is safe to say that where an eczema is limited to these parts, and is attended with excessive itching, in the majority of cases the itching was the original trouble, and the eczema the consequence. Cure the itching and the eczema will take care of itself.

*Kraurosis vulvæ*, a disease characterized, when fully developed by decided atrophic changes, is said to begin as a pruritus, and, with some authority, the opinion has been expressed that it is to the long continued irritation, to the rubbing and scratching, that the subsequent trophic changes are due. However that may be, there is abundant evidence that such a sequence does exist in many of the inflammatory reactions of the skin.

Not to mention the impetigos and other infectious maladies that may be distributed over the skin by the finger-nails where there is itching, there are many pure vasomotor disturbances with more or less decided trophic changes that must be attributed to a preliminary pruritus and are simply "scratch-effects." A familiar instance is the so-called "flannel eczema." There clearly the itching is the first effect produced. The papular eczema (improperly so-called) is a purely traumatic affair and the direct consequence of scratching and rubbing.

For such inflammatory papular eruptions, the French (Besnier, Brocq, Jacquet) employ the convenient term "lichenification." The eruption does not show the diffuse impairment of the epidermis characteristic of eczema, nor does it assume the peculiar clinical forms of any of the typical lichens. Its lesions are chiefly associated with the hair follicles which most readily react to surface irritation, and in which it is easy to believe that the element of hyperkinesis already referred to plays an important part. To show that they were the result of scratching, Jacquet* in a case of generalized pruritus, with marked inflammatory vasomotor disturbance, together with much thickening of the skin, found that when a carefully adjusted dressing was applied to a particular part so as to eliminate all external irritation, in the part so treated, not only did the itching cease, but the vasomotor affection rapidly disappeared also. The conclusion he draws is that in most pruriginous papular diseases it is not the papule, as commonly maintained, that is the cause of the itching, so much as it is the itching that is the cause of the papule.

There is a diversity of opinion with regard to the significance of the papule in prurigo—the prurigo of Hebra. Bernhardt, in a paper on the Pathogenesis of Prurigo (*Arch. f. Derm. u. Syph.*, lvii, p. 175) thought that he had settled it adversely to the opinion of Jacquet in reporting the case of a man, three of whose extremities were affected with this disease, while the fourth, an arm that had suffered infantile paralysis with retarded development, was wholly exempt both from itching and from palpulation. Because the tactile sensation of this arm was apparently normal, he maintained that it could not be the itching that had caused the papules. If papules *had* occurred, and without itching, the case would have been stronger. Why both itching and papulation remained absent is by no means clear. One consideration that might have much significance in this connection is the possible implication of the skin muscles in the motor paralysis of the arm. The characteristic exemption of the nonhairy parts in prurigo is significant. Accepting the view maintained by Auspitz that prurigo is a sensory and motory neurosis combined, in that combination, I believe, lies the essential source of the disease. But wherever it begins and whatever part we assign to sensory, motory or trophic nerves, it is an undeniable fact, and obvious in almost every case, that much the greater part of the trophic changes in prurigo are purely of traumatic origin and the result of scratching.

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* Annales de Derm. et de S., 1890, p. 487.

Even in pruriginous diseases, where lesions have a definitely typical and pathognomonic character, traumatism plays such an important rôle in the spread and continuance of the disease that no measures of treatment have more influence on its course than local antipruritics. This is true especially of lichen planus, in which, although an independent type of disease, the characteristic lesions may be provoked at will by simply scratching with a pin. To antipruritics I would assign almost an equally important place in *Dermatitis herpetiformis,* a neuropathic disease of internal origin and always attended with intense itching.

Indeed, in the treatment of all pruriginous affections, measures directed to the relief of itching are of the first importance. The hyperesthesia that is always present connotes a lessened tolerance of irritation, a diminished power of resistance in the cutaneous nerves and in the cutaneous tissues to traumatism and all injuries. The equilibrium that is normally preserved between the integument and the external world is destroyed. The protection breaks down. The simplest way to reinforce protection is to afford rest. Allay the itching and you eliminate an etiological factor, important always, and often the prime, the essential one of the disease.

*Treatment.*—In determining what measures are indicated in the treatment of pruritus, there are then two facts in its pathogenesis to be chiefly considered. One relates to the hyperesthesia which is the invariable accompaniment of morbid itching as a predisposing element, and the other to a local surcharge of nervous excitement.

The element of hyperesthesia, dependent as it is on morbid conditions more or less general, will be alleviated only as these general conditions are susceptible of improvement. In pruritus essentialis especially, discovery and treatment of systemic diseases or reflex irritations upon which the hyperesthesia may depend are of greatest importance. Unfortunately, in a large proportion of cases, our search will be attended only with indifferent success, and we can only base our therapeutics on general principles.

Such general principles there are, applicable, both to the treatment of the preliminary hyperesthesia and to the actual occurrence of itching. Their close observance, as well as a strict adherence to them will in the end give much better results than following the prevalent inclination to try every new vaunted remedy, the rationale of which we know little or nothing about. With some theory to start with, even though a faulty one, if there are known facts woven into its texture, we have a standard by which to correct errors as we gradually gather experience. If we rely solely on the experience of others, with empiricism for our only guide, our position is that of the blind led by the blind.

In the treatment of almost every disease we can learn something from nature's mode of relief. It is so in pruritus. It is natural for every animal when it itches to scratch, and for the time being, at least, that simple method does give relief.

It is worth our while to inquire how scratching relieves itching. It is an animal instinct, inherited doubtless, from the remotest antiquity. But so far as the disease pruritus is concerned, the instinct is usually a false one. It assumes the presence of an offending body or miniature attack. There goes with it a subconscious impression of a vague and indeterminate character. Such impressions are always attended with an accumulation and excess of excitement, causing irritation, fret and vexation, which become greater the longer the vague impression lasts. The act of scratching tends to divert the sensory engorgement in the skin into other energies, into freer channels of sensation. The relief temporarily afforded is not unlike that which a quick, vindictive blow at his adversary gives to the pent-up feelings of an injured and angry man. For the instant the accumulated nerve excitement is dissipated.

But while affording temporary relief, or relief that in ordinary, or what may be termed physiological itching, may be permanent, in morbid pruritus, in pruritus dependent upon a preexisting state of hyperesthesia, the effect of this method is to augment the excitation, and will almost surely be followed by another engorgement with greater pruritic excitement than before. Furthermore, the resulting hyperemia, itself an accessory cause of pruritus, will very likely do more than offset the temporary diversion that the scratching affords, and, besides this, the injury done the epidermis renders it each time more vulnerable and more sensitive to irritating contacts. Scratching is an abuse of what would *à priori* seem to be a rational mode of treatment. But there are valuable suggestions to be drawn from nature's method, nevertheless. It is possible to secure the same kind of relief that scratching affords in ways that are safer and that insure a relief that is more lasting. In the first place, acting on the suggestion of the implied presence of a foreign body, or some extra or intracutaneous irritant, our first care should be to avoid scrupulously all irritating contacts. Attention should be given to the clothing, especially to the quality of the underwear, to protection from changes of temperature, to excessive dryness or scaliness of the skin, to irritating discharges, and incidentally, also, to the prevention of scratching.

When trophic changes in the skin, especially those incident to inflammatory diseases, are the cause of itching, the local excitants are intracutaneous. In such cases, remedies that alleviate the inflammation or tend to heal the local disease are often erroneously called anti-pruritics, because, incidentally, along with the improvement in the inflammatory disease, the pruritus disappears also. Thus ichthyol, resorcin, tumenol, tar, benzoin, benzoin acid and sulphur preparations, relieve hyperemia, which is often an accessory factor in the occurrence of pruritus, and they have a decided healing effect on catarrhal inflammations. But they are not true antipruritics.

But let us return to the suggestions afforded by the action of scratching. As already intimated, it creates a diversion, permitting the release of pent-up nerve excitement, deploying it in the exercise of other activities and other less vague sensations. The mere muscular activity is one diversion. Another lies in the substitution for the vague sensation of itching of another sensation which is more decided and definite, like that of smarting or pain or else one that has a distinct perceptive character. A perceptive sensation is always evoked by a firm and moderately forceful contact. Such diversion can often be made effectual without scratching. Firm pressure of the itchy surface, or, instead of using the finger-nails like claws, drawing them backward with some force but not violently, over the skin, will often give almost the same relief.

The substitution of another sensation for that of itching is the rationale of the action of many of the antipruritics in common use. Thus the vinegar lotion in urticaria or prickly heat, lemon juice, cologne water, the pungent tinctures, as of lavender, veratrum or camphor; chloroform in various dilutions, menthol, thymol and simple hot water act in this way, producing as they do more or less smarting or stinging of the skin. Judiciously applied, and when there is not too much inflammatory excitement, they often give relief and without injury to the skin. Some of them act in other ways also.

One of the most valuable remedies for itching, perhaps the most generally serviceable of all the antipruritics is menthol. It is not an anesthetic to the skin, but it relieves itching as it relieves pain by substituting for these sensations a disturbance of the temperature sense. It is the feeling of coldness produced by menthol applications to the skin that extinguishes the pruritic sensation even more effectually than does the feeling of smarting. This drug may be used in ointment or oil or in dusting powder, but is more effectual in alcoholic solutions of from 2 to 4 per cent. Dissolved in a little cologne water, it seems even more efficacious, the cologne water itself having some antipruritic virtue. It may be used very freely if there is not too much inflammation, and it is a good plan, when itching is troublesome at night, to instruct the patient to take a bottle of it to bed with him, and to sop the solution on the moment any pruritus begins. To the menthol in the same preparation may be added thymol or chloroform. The last named combination is especially serviceable in urticaria.

Certain remedies relieve pruritus through a sedative action on the skin, including the cutaneous anesthetics. Hot water, when applied for a certain length of time, is decidedly sedative. Useful in many forms of pruritus, it is especially so in itching of the genitals and anus. Camphor combines with the revulsion action already alluded to, a certain degree of sedation. In this connection also should be mentioned hydrocyanic acid and the cyanide of potassium, though they are remedies that I have very rarely resorted to, nor have I found the local use of opium, belladonna, stramonium or other sedatives of the same class of much avail. It might be supposed that such a decided local anesthetic as cocaine would be of great value in pruritus. But on the intact epidermis it is inert, and the same is true of orthoform. They have their uses, particularly in pruritus affecting the lower mucous orifices, which will be referred to later on. Thymol is in some degree anesthetic to the skin, notwithstanding its first effect is irritant, and is especially useful in certain cases of severe and persistent itching; when added to the menthol preparations, its anesthetic action supplementing the peculiar action of the menthol. It is a good antiseptic also. Many of the antiseptics are antipruritic and some of them cause more or less cutaneous anesthesia. Notably is this true of the mercuric chloride and of carbolic acid. It seems to be the property of such antiseptics to retard vital action or, by their further operation to destroy it entirely. It is perhaps by impeding the molecular movements in the excited nerves that they relieve pruritus. Concentrated solutions both of mercuric chloride and carbolic acid produce decided anesthesia of the skin.

Of all the local antipruritics, carbolic acid is the most reliable and has the most lasting effect. It may be used in alcoholic or aqueous solutions, in ointment or in oils. Though more or less efficacious in various strengths, to obtain its best effect, it should be used strong. Its corrosive action on the skin is its chief objection, and it is well also, before applying it over extensive areas to bear in mind the possibility of carbolic poisoning. This latter, I believe, is not a very serious danger if ordinary caution is exercised. Though I have occasionally observed smoky urine after a patient had used carbolic acid to excess, the symptom disappeared readily when the applications were stopped and the harm done appeared insignificant. On the other hand, I have repeatedly encountered cases where patients with severe and extensive pruritus had used strong solutions of carbolic acid freely for months and with no discoverable untoward symptom as a consequence.

The danger of injury to the skin from the caustic action is a more imminent one, when very strong preparations of carbolic acid are used, and such strong preparations are often needed. This caustic action may be neutralized, as it is well known, by alcohol, so that over limited areas the pure acid may be applied if washed off with alcohol directly afterward. Generally I have found a drying oil, linseed oil, more particularly, the best corrigent. The linseed oil, being a keratoplastic agent, serves to offset the keratolytic action of the acid. A little liquor potassi may be added with advantage for its anticatarrhal effect as well as because it emulsifies the oil, together with some essential oil to correct the odor. The following is the prescription:

℞ Liquor potassi ........................ ʒj
Acid carbolici ........................ ʒij
Olei lini ........................ q.s. ad. ℥j
M Olei verbenæ ........................ ♏ij

Applied once a day, especially at night, when itching is always at its worst, this 25-per-cent. solution will often give greater and more lasting relief to an intense pruritus than any other remedy that I know of. Oftener than once a day it should seldom be used, lest it prove too corrosive. This maximum strength is suited more particularly to limited areas of pruritus in which inflammation is not a prominent factor, but the same or a somewhat weaker preparation may sometimes be used to advantage and with safety for severe itching affecting the surface more generally.

These few remedies for external use by no means include all the local antipruritics, although, I believe, they comprise the best of them, or, at least, those that have best borne the test of experience. They chiefly serve, however, to illustrate concretely the application of the therapeutic principles already referred to. They all have for their object to afford rest—to restore equilibrium to the perturbed nerves and they do this either by removal of an offending irritant, by sensory diversion through substitution or by direct sedation or anesthesia.

As to internal remedies for pruritus, aside from the general medication addressed to the special requirements of individual cases, there is unfortunately not much to say that is favorable. There are no internal remedies that can be definitely described as antipruritics. Though pruritus may be removed temporarily by narcotics, when the narcosis of the skin wears off, the condition is apt to be worse than before. Certain analgesic remedies relieve pruritus to a limited degree, but the relief is not lasting, and is offset by greater disadvantages. Thus antipyrine has been used with some success in itching, but it must be given in depressing doses and is liable to produce irritable rashes of the skin, so that the remedy may be as bad as the disease. The toxic action of opiates on the skin is likewise objectionable, and is even more liable to be followed by aggravation of the pruritus. On the other hand such general sedatives as the bromides are not only useful, but sometimes, particularly when there is great hyperesthesia, indispensable, and occasionally, when aggravated by loss of sleep, a hypnotic like sulphonal is indicated.

In urticaria or in pruriginous affections in which an urticarial element is prominent, there would seem to be an indication for motor-depressants to overcome the spastic contraction of the skin muscles. Atropine is a recognized remedy in such conditions. Given in large doses it will sometimes arrest or abort a paroxysm of violent urticaria in much the same way as does the attack of syncope that sometimes supervenes in severe cases. It is not a remedy I would often resort to, and the same may be said of pilocarpine, which has been recommended, and likewise of gelseminum. To such remedies in the very severe cases the cautious use of chloroform by inhalation is to be preferred, which also relaxes spasm and has not the attendant after-effects.

In toxic urticaria there is also an indication for antiseptic remedies, such as creosote or the salicylates. Administered in full doses during or at the outset of an attack, these drugs sometimes seem to be of decided benefit. This more particularly applies to cases of chronic or recurrent urticaria, in which the attacks are associated presumably with the formation of a toxin in the economy, incidental to deranged metabolism and usually following depressing influences of various sorts, such as overfatigue, worry or exposure. In that simple form of urticaria toxica that is the direct effect of error of diet or, dependent on an idiosyncrasy of the individual, follows the ingestion of some particular article of food or some special drug, a speedy relief may usually be obtained by the administration of a brisk emetic at the outset, or a little later on of a saline purge.

Regarding the management of pruritus senilis, in so far as the disease is dependent on the common causes of itching already cited, little special consideration is required. Many of the common causes of itching are peculiarly apt to occur in the aged, especially such as obtain in pruritus essentialis. When eczema is associated with the disease, as it often is, whether it be the dominant and primary affection or is only secondary, to that mainly should attention be directed. But it is a noticeable fact that in pruritus senilis unaccompanied by eczema harsher methods of stimulating the skin are much better tolerated than in the ordinary essential pruritus. Indeed, patients often find relief that is more or less lasting from vigorous rubbing or friction of the skin, a kind of stimulation that would be pretty sure, in the end to aggravate any ordinary pruritic disease. The difference may be due to the fact that in pruritus senilis a considerable degree of hypopselaphesia is present—sufficient to render tactile impressions vague and perturbing. Paresthesiæ of any special sense are especially apt to occur in conditions of impairment of that sense. General stimulation of the skin tends to relieve the condition of impairment in much the same way as a din of sounds will often restore temporarily an impaired sense of hearing, when to the normal ear it would be disturbing or confusing. But, whatever its explanation may be, such cutaneous stimulation as has been referred to above as "sensory diversion by substitution" is especially effective in pruritus senilis. In this condition, besides friction to the skin, electricity has been found especially useful, particularly faradism or the electric brush of the static machine. Internally cannabis indica, probably because of its well-known sensory stimulant action, is sometimes of benefit when given in full doses. Strychnine is decidedly an appropriate remedy.

For those who are subject to pruritus hyemalis, it is especially important that digestion and general nutrition should be kept in good order and all indiscretions in eating and drinking should be avoided. After any excess in alcoholism, the night itching is always worse. At the first onset of cold weather thick underclothing should be put on, or the legs (where the trouble is usually worst) may be protected by long, woolen, footless stockings, drawn over the customary underwear. An antipruritic should be ready at hand during the night, the best being an alcoholic solution of menthol or thymol. In the morning search should be made for any points of excoriation which are liable to become the starting points of an eczema, and a healing salve should be applied. Inasmuch as the skin is apt to be dry, and a dry skin is prone to itch, cold cream or other unguent should be rubbed in, especially after the bath.

Bath pruritus is more difficult to control, even, than the winter pruritus. Something may be done to mitigate it by certain regulations. The temperature of the water and also of the room should be comfortably warm. Sometimes the addition of salt to the water makes it less irritating. Soap should be used sparingly, and only the blandest kinds should be used. A superfatted soap, such as the thymol Baby Soap of Eichhoff answers very well. After the bath the skin should be thoroughly dried, but with the softest towels and with the least possible friction of the skin, and afterward a little cold cream and powder applied. Arsenic as an internal remedy for this peculiar form of hyperesthesia has been highly recommended, and occasionally has a beneficial effect.

In those localized forms of pruritus that occur about the anus or external genitals, search should first be made for the indicatio causalis—for possible sources of reflex irritation, or for any more general condition that may be held responsible, such as lithemia, neurasthenia or diabetes. Excessive alkalinity of the blood is said to be sometimes such a causative condition, and to be amenable to treatment by the mineral acids. Many of these conditions do not yield readily to treatment, and meantime we must chiefly rely on more direct measures, which will usually give a much quicker return.

In deciding what local remedies to use, we should take into consideration the presence or absence of inflammatory complications, nor should the possible presence of pedeculi be overlooked. When inflammation is added to the pruritic excitement, as may be the case in pruritus vulvæ more particularly, the more effective antipruritics may have to be deferred for a night or two. Emollients, lotions of aluminum acetate, simple Lassar paste (without salicylic acid) with two to three per cent. carbolic acid, or with ten per cent. orthoform, perhaps preceded by an application of cocaine, may answer better till the inflammation is allayed. Cocaine is sometimes indispensable when the itching is intense, but it is not a good remedy for prolonged use. It is only serviceable on mucous membranes or abraded surfaces; it gives only temporary relief, and when long continued produces vascular atony and increased disposition to hyperemia, an effect often noticed in inflammatory conditions of the mucous membranes of the eye and nose. Orthoform in powder is often useful on abraded surfaces or fissures both of the vulva and of the anus.

Lassar paste has an advantage over ordinary ointments (which as a rule are not well borne in pruritus of the vulva or anus), because of the starch which it contains, which makes it less heating as well as permeable to moisture, promoting the escape of any irritating exudations from the surface.

Applications of hot water sometimes have an excellent effect, especially where the parts are thickened from traumatisms or long-continued inflammation. The temperature of the water may be gradually raised to 110° F. and the applications should be continued for several minutes.

But the sovereign remedy for pruritus vulvæ or pruritus ani is carbolic acid. No other remedy is so effectual or gives such prolonged relief. A single application of the strong oil mentioned above will often afford rest and release from itching for an entire night. But it should not be often repeated nor applied too lavishly. More than one or two applications of this strong preparation in twenty-four hours would be liable to do injury. The principal seat of itching, whether of the anus or vulva, is just at the junction of the skin with the mucous membrane, and much beyond these regions the applications need not go. Should the itching recur during the night, it is better to employ some other antipruritic, such as a five-per-cent. solution of menthol in oilve oil or cocoa butter applied on a folded rag or bit of sheet lint. In less acute cases there is a multitude of remedies that will give more or less relief. Where a catarrhal condition is present, an excellent application is the watery solution of ichthyol (from ʒ ss. to ʒj to the ounce) allowed to dry on, more especially for pruritus ani. Painting the surface with tincture of benzoin is recommended, and in some cases that are rebellious a good effect is produced by nitrate of silver, 5 to 30 grains in water or as advised by Crocker in sweet spirit of niter. The nitrate of silver solution is also very useful in pruritus of the scrotum. In pruritus ani the method advised by Allingham is sometimes worth trying. It consists in introducing a conical plug of bone or other hard substance into the anus at night and retaining it in place by a suitable dressing. It acts on the principle of diversion. The same principle explains the good effects of multiple scarification in old cases of pruritus of the scrotum, as recommended by Vidal.

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## THE ROENTGEN RAY: ITS MECHANICS, PHYSICS, PHYSIOLOGY AND PATHOLOGY.*

BY EDEN V. DELPHEY, M. D.,
OF NEW YORK.

That form of energy, known as the Roentgen or X-ray, is produced by the bombardment of molecules against a metal plate in a vacuum of high degree. So far the only means we have at our service for producing this intense bombardment and its consequent X-ray is the electric current. The X-ray is not some form of electricity, but is a higher rate of vibration even than light, and is the transformed energy of the electric current. This latter is simply the mechanism for its production. Any other form of energy, which would bombard the metal plate with sufficient intensity, would also produce the X-ray, and it may be in the future some such other method may be discovered.

The apparatus for producing this electric current is of two varieties: Static machines and coil machines, and this latter may be divided into two sub-varieties: ordinary Rhumkorff coils and high-frequency coils, in which there are one principal and many minor surges to each interruption.

The usual static electrical machine, having ten or more revolving plates, when run by a motor produces a very efficient current for exciting the X-ray tube, especially for fluoroscopic work.

In using the static machine, there are four methods of connecting up the tubes. (1) By connecting the anode of the tube to the positive terminal of the prime conductor, which may be distinguished as the one having the longest white end to the spark when the terminals are brought close together, and the cathode end of the tube to the negative end of the prime conductor; (2) by connecting as before wth a spark-gap, either single or multiple in series; (3) by connecting up as in second with the Leyden jars in parallel; (4) by connecting the cords to the outside of the Leyden jars, bringing the terminals of the prime conductors close together, sparking across (or an adjustable spark-gap may be arranged in place of the single spark), thus producing an induced current through the tube, but in the opposite direction from the direct current and therefore the tube must be connected up accordingly.

Sometimes although the current is passing through the tube properly, as in first, the X-rays are not produced and this can often be remedied by putting a spark-gap, either single or multiple, in series, as in second, and even that may be improved by putting the Leyden jars in parallel, as in third. There is no absolute rule to determine the length of the spark-gap, and although it is generally required at the anode, it may be necessary at the cathode end of the tube or both. It must be learned by actual trial. I have found that the multiple spark-gap gives the steadier interruptions and therefore a steadier output of the X-ray, and by its use a tube, whose vacuum and resistance have fallen so low as to seem to require re-exhaustion, may be excited to perfect radiance and the life of the tube not only renewed but apparently resurrected.

The Rhumkorff coil, of sufficient size to produce a spark six inches or more in length, is an excellent means of exciting the X-ray tube. Its special advantages are its portability and its readiness for use in all kinds of weather. Its disadvantage is the greater amplitude of the current which is manifested by the fatter spark, and its consequently greater likelihood to burn the patient.

All the best Rhumkorff coils have the secondary wound in sections so as to avoid the danger of sparking across from one point to another of the highest potential which, by burning out the insulation, would destroy the usefulness of the coil. Some coils also have the sections on movable spools, any one of which can be removed at will for repairs if needed. Some coils also have means of varying the length of the primary as in the Scheidel coil, in which there are three separate sections of the primary which may be used singly, part or all together in series or parallel. This of course varies the amount of the inductance in the secondary coil and therefore the output of the apparatus. In his apparatus, Heinze has arranged four Leyden jars so that two are in series and two in parallel in succession, and the current from these can be used or not at will.

The current in the secondary coil is induced almost entirely by the break, not the make, in the primary, and is also almost in proportion to the suddenness or sharpness of such break in the primary current. Therefore it is usual to employ some means to accentuate the sharpness of the break. This is done by placing a condenser in shunt with the primary winding. This condenser is composed of a number of layers of tinfoil separated by a dielectric and produces the effect of a number of Leyden jars connected in parallel.

The Kinraidai high-frequency apparatus has the coils wound in a flat spiral, the secondary inside the primary, in such a manner that there is small likelihood of sparking between the ends of the secondary. The interruptions are produced by sparks across the space between two water cooled copper-plates and consist of oscillations made up of one principal and many (about twenty) minor surges of current in the primary and consequently of the same number in the secondary coil.

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* Read at the Nineteenth Annual Meeting of the New York State Medical Association, Oct. 23, 1902.

The interrupters for the primary current in the coil machines may be divided into four varieties: The mechanical, the mechanico-electrolytic, the thermo-electrolytic, the electrolytic.

For low tension currents some form of the spring interrupter is usually satisfactory, but with high tension currents the amount of erosion on the surface of the contact points is so great as to interfere with the flow of the current, thus rendering them practically useless. Therefore other means have been devised to interrupt the circuit. One of these is the slate wheel, having a segment of copper whereby a contact is made, completing the circuit, at each revolution: the length of the make and break being proportionate to the length of the copper and slate arcs. It can be speeded up to fifteen hundred revolutions per minute and is one of the simplest and best interrupters made. There are two mercury-dip interrupters. One in which a rod is dipped perpendicularly, and the other where the rods are radii of a circle. They both make a contact and complete the circuit with each dip of the rods. In the Max Levy mercury interrupter the liquid mercury is pumped up by an Archimedean screw and is forced out laterally through tubes and strikes the downward extending fingers of a rotating piece of metal which is connected with one pole of the current, but is insulated from the other. The current flows through the mercury, the arms, the fingers, and is interrupted as it passes across from one finger to the other. The Cunningham interrupter is similar except that the screw and arms revolve while the insulated segment with fingers is stationary. Wherever these arms, ejecting mercury, revolve very rapidly, (he claims as high as twenty thousand per minute), the mercury is apt to feather, and to prevent this he has arranged two horns which scoop up the air, and as it passes out of the opposite end it blows off the jet as it passes each finger of the insulated metallic segment. In this interrupter the current does not pass through the whole mass of mercury, but it goes in at one segment across the mercury and arms and out at the other segment.

The Heinze mechanico-electrolytic interrupter is a combination of the slate wheel with the copper segment and the perpendicular dip interrupter. At each dip the current is conveyed by the electrolyte and is broken by the slate wheel, by the withdrawal of the platinum point and also by the bubble of hydrogen gas. A brush is so arranged that the current may be passing during the whole time or during only part of the time the platinum point is dipped into the electrolyte. In this manner the contact may be quite long or exceedingly short.

In the thermo-electrolytic interrupter of Caldwell, the interruptions are caused by the tension of the current passing through the small hole in the partition which divides the two chambers. This heats the electrolyte to the boiling point and the bubble of steam cuts off all electric connection between the two chambers. The Wehnelt is a pure electrolytic interrupter and the current is broken by the passing of a bubble of hydrogen gas through the hole in the partition.

The rapidity of the interruptions in these last two apparatus and their several modifications is due to the size of the hole and the tension and amplitude of the current, and may be somewhat modified at will. The former claims that the interruptions from his interrupter are so sharp that a condenser is not needed.

The Bario-vacuum regulator consists of a hard rubber tube enclosing two terminals, forming a spark-gap, and is connected in shunt with the adjustable tube in such a manner that, when the resistance through the tube is greater than it is across the gap, the current jumps across and passes through the adjusting chemical and thereby lowers the vacuum. Its advantage is that the sparks being enclosed do not annoy the patient.

The X-ray tube consists, usually, of a very thin glass globe about six inches in diameter with extensions at opposite sides, four to six inches long and about an inch in diameter. These extensions convey and support the terminals and also form handles whereby the tube may be supported. The cathode is a cup-shaped disk, usually of aluminum and is situated just within the circumference of the globe. The anode is usually made of platinum, although in some imported tubes, the anode is made of a peculiarly hardened piece of iron or steel. The anode should be in the center of the sphere and at an angle of 135° to the current of the cathode stream. This is the simplest form of tube. Some others have an extra attachment for holding the tube; others have two anodes claiming the output is very much increased thereby. Inasmuch as the vacuum of all tubes varies very much at different times during use, and always tends to become higher, both in vacuum and resistance, by the absorption of the gas still contained in the tube, or its adhesion to the inner surface of the sphere, a small extension is blown into one side of the tube handle and this is filled with a chemical which gives off gas or vapor when the electric current passes through it. Different makers use different chemicals or combinations of chemicals. The most common are potassic hydrate, sodium formate, nitrate and nitrate of ammonium, copper sulphate and dioxide of manganese; but the use of potassic hydrate is most favored. The electric connections can be so adjusted that as the vacuum becomes too high and the internal resistance too great, the current, taking the path of least resistance, jumps across to the terminal imbedded in the chemical letting off a small amount of gas or vapor thus lowering the vacuum. Another adjustable tube is made wherein an extra cathode, placed in a subsidiary chamber, is composed of such a substance that it gives off gas when the current passes through it, thus lowering the vacuum. On the opposite end of the same chamber is placed a spiral of platinum wire which gives off a shower of fine platinum particles, thus raising the vacuum when the current from the positive pole is passed through it. In this tube the vacuum can be raised or lowered at will. Some manufacturers have a method of treating the anode, others of making the anode of selenium iron, and others of washing the inside of the glass with some secret chemical, which gives out gas when heated by use or by other means. Some tubes are likely to drop their vacuum so as to be nearly if not altogether useless, and yet such a tube may often be excited to its former radiance by putting a single or multiple spark-gap in series.

On account of the liability of the anode to burn out when forced, a tube has been made with a rotary target, and when one part is burned through, by giving a slight jar, another place can be brought into focus, thereby increasing and extending the life of the tube. Other tubes are made whereby the anodes are kept cool by a current of water which traverses the stem and carries off the heat from the back of the target.

For the alternating current the tubes may be made the same as for the direct current. but, by so doing, one-half of the energy is lost; or by placing cathodes at both ends and a double anode, whose surfaces converge at an angle of about 60°, in the center of the sphere. The wires are connected at the ends of the terminals indifferently as the current is alternately positive and negative, and the anode is connected with a good "ground." The difficulty with this tube is to get the two sides of the double-faced target focussed exactly alike; although the current is an alternating one the output of X-rays is continuous.

In the Caldwell double-focus tube, the two anodes are about three inches apart, and it is used in connection with his stereoscopic fluoroscope, Caldwell's treatment tube, which is similar to the endodiascope of Bouchacourt, consists of a pear-shaped globe with the cathode in the bulbous end, the anode in the side, and a platinum target at an angle of about 135° to the cathode stream at the extreme tip of the tube. The cathode stream passes in straight lines to the target, while the anode stream turns the angle of the tube to meet it. Because of its smallness, its shape and general construction, the smaller end can be introduced into any artificial or natural orifices of the body and the X-rays brought into close contact with the diseased part, thereby being much more efficacious. These tubes of course can be made of a high or low vacuum as desired.

As the X-ray is invisible it is necessarv to have some medium to translate or transform it so that its manifestations can be perceived by the human eye. This is done by means of the fluoroscope. This consists of a piece of cardboard covered with a thin layer of some fluorescent substance, preferably platino-cyanide of barium. For convenience, this is made the base, fluorescent side inward, of a pyramidal box, of which the apex is cut off and adjusted to the face about the eyes, so as to cut off all external light, in order that the fluorescent picture may be more distinct. Caldwell has arranged an alternating shutter which cuts off the fluorescent picture from each eye successively at a very rapid rate, this in connection with his double-focus tube gives a stereoscopic effect—solidity—to the mental perception of the image.

The actinometer consists of a small fluoroscopic screen arranged in a pyramidal box with two sets, of ten each, of circular discs of tinfoil with holes punctured through them, so that any number of layers of tinfoil can be brought between the screen and the tube, and as one set of discs is ten times as thick as the other, the resistance to penetration may be rated from one to one hundred. This apparatus determines the penetration, but not the amplitude of the X-ray, and as the actinic effect of the ray is determined by, and is in proportion to, both the amplitude and penetration, it should more properly be called diapeirometer or diaperometer. Still this is a very useful instrument to register the quality of the tube in therapeutic work.*

*Physics.*—The human faculties are capable of being influenced by certain variations, intensities and rapidities of energy, but not by all. The lowest of these is recognized as motion by the senses of touch and sight. When these vibrations increase in rapidity to the number of sixteen per second they are perceived as the lowest audible sound, although we have reason to believe that certain insects are susceptible to the sounds which are inaudible to the human ear, both because of the slow vibration and the consequent low pitch and the rapid vibration and consequent high pitch. The highest audible sound consists of vibrations at the rate of forty thousand per second.

Between the waves of sound, which are air waves, and the waves of heat, which are ether waves, there is quite a gap, in the rapidity of the vibrations which the human faculties are unable to perceive. In this gap are the Hertz waves, which are employed in wireless telegraphy and which are approximately two hundred and thirty million per second.

The next rate of perceptible vibrations is recognized as heat. Heat and light overlap. The infra-red rays being one hundred billions per second, while the visible colors of the spectrum, range from four hundred to seven hundred and fifty billions per second. The ultra-violet rays vibrate at about the rate of two trillions per second.

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* Since writing the above, I have learned of two methods of measuring the output of X-ray tubes. The first is the "X-ometer" of Buguet and consists of an apparatus for measuring the fluorescent effect of the rays in units of and compared to standard decimal candles.

The second is the chromo-radiometer of Holzknecht, the court expert of Vienna. The principle of this is the same as that employed to determine the length of time required to print photographs and have them all of the same tone, and it consists of a mixture of chemically pure chloride and sulphate of sodium, which turns from yellow to lavender according to the time of exposure to the X-rays. By comparison with a standard scale he determines the actinic power of the given tube for a specified time, and he affirms that the physiological and pathological effects are in direct and exact proportion to the actinic effects indicated by his apparatus.

The Becquerel rays are higher and the X-rays still higher yet.

Light passes through substances in direct ratio to their translucency, a quality which we cannot comprehend and which is not in inverse proportion to the substances' density. Light may be reflected, refracted and polarized; so may also the Becquerel rays, but not to the same extent as light nor even as the ultra-violet rays, and these Becquerel rays are undoubtedly midway between light and the X-rays. The X-rays are the highest form of vibration which we know as such. The waves are undoubtedly too small to be reflected by any polish we are at present able to obtain, when we do our best the surface is still too rough; or to be refracted by any mechanism we are at present able to construct. The rays travel in straight lines and cannot be bent or diverged by a magnet or by any other known means. They induce chemical action—are photographic—cause fluorescence, discharge electrified bodies by making the air a good conductor of electricity as it may be demonstrated by the electroscope. I had a number of pocket batteries in my X-ray room and I found in a short time that they had been entirely discharged. As I had not used them I was at a loss to understand the cause and at first attributed it to the deterioration of the ingredients, but it was either due to the X-rays short circuiting the batteries, or to the reduction of the chemical ingredients of the batteries by the X-rays which passed through the containing cells. Later by putting them—other pocket batteries—in another room with a thick brick wall intervening, I subsequently found that they did not discharge on standing.

The cathode stream in the X-ray tube consists of molecules of gas, still contained in the tube, and the negative ions moving in a free path on account of the tenuity of the vacuum (about one two-millionth of an atmosphere). They move in straight lines from the surface from which they are given off, therefore the cathode is made concave, so that the rays may converge to a point on the target. After these rays meet to form a pencil, they do not diverge, but continue in a straight line until they meet some resistance. Therefore the target should be a little beyond the true focus of the concave disc. The cathode stream may be deflected by a magnet in the same manner as the electric arc, but the X-rays cannot. When the cathode rays bombard the target, there occurs a transformation of energy and the resultant X-rays are emitted in all directions from the point of bombardment.

Why the platino-cyanide of barium becomes fluorescent we do not know. We recognize the fact that it does so and make use of it accordingly. Inasmuch as the X-rays pass through substance in inverse proportion to their density, it follows that the denser substances will cast the deeper shadows, and these lights and shadows make the picture on the fluorescent screen and photographic plate. Since the X-rays diverge from a small point on the target, the nearer the object is to the tube, the greater will be the magnification, and vice-versa.

When the current is continuous, the higher the vacuum the greater the penetration because as the molecules have a freer path they strike the target with greater force, and consequently the X-ray is more intense. With all the other conditions and vacuum the same, the resistance to the electric current in the tube is not always the same. A non-adjustable tube will vary its resistance both up and down while in use, as indicated by sparking across between the terminals of the prime conductor when they are adjusted at a distance just a little greater than the resistance of the tube. The larger the amplitude of the electric current the greater the amplitude of the X-rays and therefore the more the actinic and physiological effects. Yet these effects are not directly proportional to the variation in the cause.

Sometimes the tube is so low as to give off no, or almost no, X-rays, but by putting a spark-gap in series with or without the Leyden jars in parallel the surges of the cathode rays are started in tube, and the bombardment against the target is thoroughly effective, producing X-rays of high penetration. The advice is often given not to heat the target, but I have found that if we wish good penetration, we must force the current till the target is at a white heat. Of course, the target is soon burned through, but that is one of the expenses of doing good work. The heat does not produce the X-rays, but the cathode stream produces the heat, the X-rays and an undertone of vibration which is manifested as yellow or apple-green light.

When the X-rays strike some resistance another set called the S-rays are produced, and when the X-rays pass through some trans-radiant medium, still another called the S′ or the Goldstein rays. These all have slightly different characteristics.

*Physiology and Pathology:*—Whether it is the X-ray itself or some other similar form of energy which accompanies the X-ray, which produces the physiological and pathological results, we are not at present able to determine with positiveness. There are a number of theories projected to account for these results, viz., (1) Mechanical bombardment producing congestion, just as any other irritant does; (2) ionization, by disarranging the ions of the molecules protoplasm; (3) induction by producing currents and countercurrents in the tissues; (4) de-electrification, which would be the opposite of electrification, either direct or by induction; (5) actinic or chemical effect. There is no reason to doubt that the X-ray may produce chemical action in the tissues, just as well as they do on the photographic plate, and this may be beneficial or harmful, according to the conditions and circumstances of each case; (6) neuro-trophic effect. As yet we have not learned on what nerve action depends, and therefore cannot determine whether or not the X-rays cause interference with this action; (7) interference of energy. Every cell and every part of protoplasm of every cell, in the body, is producing energy, and the sum of these energies constitute life. What life is, investigators have tried for centuries to determine, and they are no nearer the solution now than in the beginning. It may be that it is only some higher form of energy than heretofore discovered, and it may be altogether different. But just as one form of energy may be modified by another, even though the interfering energy may be of a lower order, just so it may be that the physiological effects may be due to such interference.

The pathological effect of too long or too frequent exposure to the X-ray or a reasonable amount of exposure, in a case where there is a susceptible idiosyncrasy, produces a dermatitis which is commonly called an X-ray burn. Beck* divides these into three stages of degrees: (1) Hyperemia with infiltration of epidermis, reddish terra-cotta color, itching, etc. (I have found also considerable tension to and a pebbly condition of the skin. Each "pebble" coming to the surface, often exuding a very small drop of thin serum, and exfoliating as the burn heals); (2) blistering, with other symptoms increased; (3) a necrosis of the true skin and underlying tissues. Codman† says that there have been less than 200 accidental burns reported. Less than one-half were serious and about one-third occurred in X-ray workers. One-third of all these burns occurred within four days from the time of exposure; one-half before the ninth day, and if the part is not burned within three weeks, it is not apt to occur at all. No burn will be produced by an exposure less than the equivalent of five minutes at ten inches. Low or soft tubes are more apt to burn than high or hard tubes. There is no good evidence of injury to the deeper structures without primary injury to the skin. Scholtz‡ reviews the literature of X-ray burns and says that:

Neisser compares the action of the X-rays to the inflammatory process of the tuberculin reaction.

Kaposi ascribes the action of the X-rays to changes in the circulation and also to fatty degeneration and molecular disintegration, resulting from inflammatory infiltration.

Oudin, Bartholomy and Darrier examined the skin from rayed guinea-pigs and found thickening of the epidermis and increase of prickle cells, rete cells and nuclear epithelia. The vessels of the cutis and sub-cutis showing no change.

Jutassy found similar changes in rabbits.

Unna found on examining human skin, using a special stain for elastic fibers, a change in the collagen; it was basophilic, but the elastic fibers were not stained.

Gossman found in an ulcer, a necrotic structureless mass in the superficial portion and masses of fibers, neuclei, leucocytes and remains of connective tissue bundles in the deeper portion. The vessels showed a degeneration of the muscular layer and intima with vacuoles in the epithelia. The cell elements were swollen and the intersubstance increased with irregular spaces containing vacuoles—indicating edema.

Scholtz also made numerous experiments on animals and says that the X-rays themselves are the only or at least the essentially active factor in producing the effects attributed to them; effect both at point of entrance and exit, appearing in some days, the acme in some weeks. The bacteriocidal effect is insignificant and scarcely plays any rôle therapeutically. The changes in the blood-vessels have probably much to do with the further development and slow healing of the ulceration.

He made sections of the skin at the end of twenty-four hours and found the protaplasm of the prickle cells diffuse, the outline was not so sharp as in the normal, and stained more than normal. Another section was removed at the end of seven days and it showed the nuclear layer loosened and containing fewer nucleated cells than normal. This layer was diminished and in some cases it had disappeared. The prickle cells were swollen and contour altered and the nuclei generally stained poorly. The chromatin appeared in clumps; the protaplasm of the cells and the nuclei swollen and often vacuolized. The corium was edematous; the connective tissue was somewhat swollen and homogeneous and stained poorly; the cells of the sweat glands showed slight degenerative changes, and the same conditions were found in the cells of the intima and media of the larger, but not of the smaller blood-vessels. Often the cells of the intima were loosened and projected into the lumen of the vessel. In more severe cases, a high grade of inflammatory reaction changes were observed with rich infiltration of polynuclear and mast cells. The elastic fibers of the skin stained poorly. The hair bulbs showed some degenerative changes in the rete cells and were often surrounded by masses of leucocytes. He summarizes as follows: (1) The X-ray causes slow degeneration. The connective tissue, the elastic fibers, musculature and the bones are not at all or are only slightly affected, and only suffer secondarily to inflammatory action. The first change is a degeneration of the epithelia. There were also localized masses of the cells of the glandular organs, of blood-vessels, of muscles and of connective tissues which show degeneration. This degeneration is both of the cell body and nucleus. (2) As soon as the inflammatory reaction has reached a sufficient degree, there is increased vessel dilatation with serious effusion, infiltration of cells and emigration of leucocytes until the structure is lost in a mass of infiltration.

400 West Fifty-seventh Street.

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**The Destruction of Rats.**—The belief gains ground that not only is bubonic plague spread by rats, but that any infectious disease may be carried by the rodents. In consequence, a premium is being offered in Copenhagen for every rat killed; and Stockholm has adopted the same measure for the extermination of the pests.

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* Medical Record, Jan. 18, 1902.
† Philadelphia Medical Journal, March 8 and 15, 1902.
‡ Arch. f. Dermat. und Syph., B. LIX, Nos. 1, 2, 3.

## THE CONGENITAL CRIMINAL.*

BY ROBERT T. IRVINE, M.D.,
OF OSSINING, N. Y.;
PHYSICIAN SING SING PRISON.

If I felt that the subject which I have been asked to introduce to you depended upon anything certain in my own researches for exciting interest, my anxiety would be indeed great; and, if I suspected that your unexplained residua was much less than my own, my fright would be measureless. As the conditions are my feelings may be best described by an illustration which you may have heard before.

A showman who found himself in one of our Southern cities with a menagerie reduced to a healthy tiger and a very sick lion, was finally compelled to take the pelt off the latter and bury the carcass. Whereupon the enterprising impresario went forth on the streets of the city to procure a substitute for his dead lion which he at last obtained in the person of one Patrick Casey, who agreed to wear the lion's pelt and roar for a certain stipend. All went well thereafter with the menagerie until the owner conceived the idea of entertaining his audience, as he expressed it, "by placing these two wild beasts of the jungle in the same cage for the first time." Pat heard this announcement with dismay, but before he had made up his mind as to his own course of action, the rear ends of the cages were backed together and he was being prodded out of his cage into that of the tiger. Pat gave one glance at the animal and the two big ferocious eyes fixed on himself, and put up a howl and a prayer in the Irish tongue to the patron Saint of all good Irishmen. Then the tiger walked over to him and said: "What's the mather wid ye? Shure ye needn't be afraid. I'm Oirish mesilf."

Understood in its entirety, the law that each plant or animal, if it reproduces, gives origin to others like itself, is so familiar by daily illustration as almost to have lost its significance, but to prove the transmission of those structural peculiarities which have resulted from functional peculiarities, and the evident inherited processes of "brain registration" involves some difficulties beyond the faculty of faulty theorizing or the summarized conclusions of the most profound and abstruse arguments.

It is a sad mission, it has been said, to cut through and destroy with the scalpel of analysis the delicate and irridescent tissues with which our proud mediocrity clothes itself. Very unsympathetic is the science of truth. Yet, after all, and I suppose doctors will agree with me, the last word of all our wisdom is this—"It is pretty nearly made out." In a purely scientific mood we may say, It is a long way from the old savage idea of the dragon swallowing the sun to the interposition of the moon's dark body between us and that luminary. The dragon was a figment of the fancy, but the eclipse was none the less a fact. Still, "it is pretty nearly made out" that the latest edition of every thought, or "fancy," must disown so much in preceding editions—as imperfect, impressions misinterpreted, essentials of situations missed, that the original theorizing, like the "wisdom of the ancients in the light of later knowledge, seems grotesquely erroneous."

Our modern physiologist does not hesitate to reduce love to a play of stamens and pistils, and thought itself to a molecular movement, while alienists class the highest flights of human genius as teratologic forms of mentality, a variety of insanity.

In our profession, without a sure experimental basis, any theory of congenital mental capacity arouses only a feeling that seems to vary between utter indifference and faint curiosity. Yet the facts in relation to the transmission of mental abnormality we are compelled to accept. We do realize the problem of the heredity of mental characteristics, but not how to meet the same with a solution. Here, as in all departments of the efflorescence of the human mind, the beginnings are lowly, but here, more than in all others, necessarily so. For that which concerns the psychology of thought is so hidden by vanity that men never make a truthful revelation of themselves except in cases where there is a complete dis-equilibrium of the intellectual faculties. Only the physician knows how often moral insanity and epilepsy are associated with high grade intellectuality, and how difficult these forms of mental alienation are to verify, because they are nearly always denied.

Very many times each year, in the performance of duties which are in the highest sense judicial as well as medical, I am confronted with this question, "How many of the malefactors of to-day have inherited from their own ancestors the predisposition to steal their neighbors' goods, to destroy human life?" The layman—religion and philanthropy, attempts to deal with this difficulty, in fact with all difficulties attaching to all questions of character acquired through heredity by emphasizing the thought that we have only to deal with tendencies and not with the springs of character thmselves. But, I assume, our profession has come to believe, almost unanimously, in the inheritance of functional characteristics, as well moral as mental and physical—in fact in the production of both body and character by heredity.

The primary data, therefore, in the study of the congenital criminal, are his ancestry; and it is of the greatest advantage in analyzing this abnormal mind that these should be traceable.

There is but little doubt, if the facts lay bare before us, and the influences disclosed which molded the character and shaped the destiny of most men who have paid the penalty of their ultimate crime with their lives, men who seem possessed of an otherwise unaccountable predisposition to destroy human life, we might have the sure revelation that during the period while their bodies were being formed a bent was being given to their characters from their birth, by their own mother contemplating the destruction of her child, and that she had imparted this disposition to do murder to the offspring. But, however far-fetched this may seem, if we find the coincidence of morality, civic virtues and sane minds with the healthy mental condition of a strong line of ancestry, and at the same time congenital abnormalities just as certainly coincident with morbid mental conditions in the ancestral line may we not rationally conclude that irregularities of mental development are due to inherited morbidity, just as the mental phenomena of idiots mark that mentally deprived type?

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* Read before the Westchester County Medical Society, held at Mount Vernon, Jan. 20, 1903.

My own observations, which have been practically unlimited along lines of information connected with the male offender, have led me to believe, in the last few years, that criminal character depends in the first instance on heredity. Of course in this, as well as all other statements made of this subject, let us ever remember that they are probably not absolutely accurate, but are mostly approximate to the truth. But in the generality of this conclusion I am satisfied to be at one with the greatest names of our profession as well as the deepest thinkers of all ages.

"We may," says Huxley, "veritably say this moral and intellectual essence of man does pass over from one fleshy tabernacle to another. In the newborn infant the character of the stock lies latent; and the *ego* is a bundle of potentialities."

Dr. Hill of Cambridge says: "I am glad Dr. Schofield believes in the inheritance of habit. . . . We need no longer try to settle the much-discussed question of whether acquired characters are transmissible by looking out for cases in which gross anatomical changes are inherited by children not brought about by their parents' tract, but we may assert with confidence that the central nervous system tends to be transmitted to their offspring."

"Inheritance," says Furneaux Jordan, "mainly determines whether a man shall be capable or incapable, brave or cowardly, trustful or suspicious, prudent or reckless, voluble or taciturn."

It was Carlyle who said, with the intuition of genius, "Parentage imposes certain definite limitations, and two fools never can and never will produce a wise child;" and, I think, if in addition the four grandparents are fools, the statement will always hold good. So the born criminal is the product, mind and body, of the forces of heredity. Not only his body, but his mind is deeply impressed with the character of the parentage. And few indeed are the criminals who come to our prison at Sing Sing with minds that were at birth *tabula rasa,* whose mental powers at birth were not already thickly sown with seeds of crime—call them definite qualities, or for the greater part at first mental tendencies; when they reach us they are surely, for the most part, anthropologically and psychologically analogies of the congenital criminal.

In order to economize time, I now ask you, once admit with me the thing of which there is an abundance of proof, that the type of a species, the primitive type, is more clearly represented in the female than in the male, and we may proceed to argue that the typical forms of the "eternal criminal" are organized and fixed in the woman through the action of heredity and the well-known longevity of the female offender. Which would explain why our existing penal systems are powerless against crime. As compared to the longevity of the male offender that of the female is almost exaggerated, which means quite a proportionate increase in criminal progeny.

But right here lies the difficulty in the presentment of this subject. The moment we attempt to bring a spring or a motive or a tendency into action it shrinks in size. To analyze a tendency, characteristics, or motives, or even to classify them is elusive beyond comparison. Yet they are always greater than can be expressed in words. And man, nevertheless, is quite the product of his tendencies, not the tendencies of the man, though he reveals them—and thus the criminal self is usually caused, not casual, however much environment may accentuate it.

In estimating the value to be given to evidence of hereditary predisposition to criminality, the proofs will always be found unsatisfactory from a scientific point of view. The question has not been fairly worked out because of the unsystematic work in prison reports. Therefore, it is a mere matter of probability in a given case. But the physician who has his finger on the pulse of this morbid inheritance, will find it in the brain to all appearances congenitally perfect, yet which has a tendency to break down under circumstances which would not affect a person of an originally healthy mentality. And vanity, always present in the recidivist and congenital criminal, with selfishness, sensuality, impurity, self-indulgence, cowardice, "visionariness," impatience, bad temper, unstableness, recklessness, apathy, self-conceit, fickleness, waywardness, and stupidity are as constant marks of the brain organization of the born criminal, as a constitutional tendency to nervous instability established in a family is indicated in the various directions of epilepsy, hysteria, hypochondriasis, neuralgia, and certain form of paralysis, insanity, eccentricity.

I attach no special value to the list of criminal characteristics above named. It is not scientific or exhaustive, and probably no two would agree that my list is according to their way of thinking, correct. But that most of these characteristics do very frequently, though not constantly, accompany these fatal degenerations, no one of experience will have the temerity to deny. According to Galton and Ribot even genius is often hereditary, and criminality which is so fatally and progressively fruitful, certainly presents stronger evidences of transmission than the rare and nearly always incomplete heredity of genius.

The frequency of delusions in their multiform characters of degenerative characteristics indicate too that crime is a degenerative psychosis of that group to which belong the children of the inebriate, the imbecile, and the epileptic parents. Not always, of course, but within the limits of our psychological view, so frequent as to make its observation beyond the experimental starting point.

In attempting, within these few minutes, to describe a subject with so wide a scope as has this—"the possible improvement of the human race under the existing conditions of law and sentiment," I can only hope to suggest some lines of development especially essential to a completer view of it. In other words, to put my finger on some things to be sought. And, I assume, your society would consider it quite deplacée for me to cite here any series of clinical researches which seem to have convinced me of the certainty that the mental condition of the criminal is modified in a constant manner by parental influences. Nearly all intellectual creations, and all discoveries of modern ontology, are the results of the slow and continuous meditations of scientific men and their predecessors; so that they form a kind of compilation, the chronology of which is not easy to follow. Therefore it is I wish to present my own views in the lines of comparative science rather than in the inventory of isolated data.

Now, however offensive or paradoxical it may seem, there is an originality, a force, and a real coherence in the very latest utterances of Galton and Booth in this matter of racial improvement, which render their views undeniably impressive. Says Mr. Galton, "In each class of society there is a strong tendency to intermarriage, which produces a material effect in the richness of brain power of the more cultured races. And it produces a still more marked effect of another kind at the lowest step of the social scale as will be painfully evident from the following extracts from the works of Mr. Booth." Mr. Galton is considering the congenital abnormals here considered by me, and he goes on to say, in the words of Mr. Booth, "The congenital criminal leads the life of a savage, with vicissitudes of extreme hardship and occasional excesses. From this class come the battered figures who slouch through the streets and play the beggar and the bully. They render no useful service; they create no wealth, more often they destroy it. They degrade whatever they touch, and as individuals are perhaps incapable of improvement." These are the barbarians, the recidivists, the men who keep our prisons teeming. And, says Mr. Booth, in sum, "It is much to be desired and to be hoped that this class may become less hereditary in its character; there appears to be no doubt that it is now hereditary to a considerable extent."

There we have a precise statement of the problem I seek to lay before you for discussion. And many who are familiar with the habits of this class do not hesitate to say "It would be an economy and a great benefit if all habitual criminals were resolutely segregated under merciful surveillance and peremptorily denied opportunities for producing offspring." It certainly would abolish a deep source of suffering and misery to a future generation, and would cause no unwarrantable hardship in this.

The natural character and faculties of human beings differ at least as widely as those of the domesticated animal—they ought to be quite as much within control. And surely the possibility of improving the race of a nation depends on the power of increasing the productivity of the best stock, and as a certain corollary decreasing the productivity of the worst. Comparative history in the light of comparative studies in religion, art, jurisprudence, and psychology, has given us a grasp to understand the idiosyncrasies of nations, but we are slow indeed to treat the doctrine of the origin of the species as a whole, its elementary hybridity, and congenital mutations, other than as a conventional science. Scientific medical men continue in untiring search for means necessary to cure and prevent diseases, yet to my knowledge no serious step has ever been taken to solve this important problem—to raise the average of healthy beings by reducing the productiveness of the undesirables.

To-day the belief is expressed in our profession, "That it is not the medical education of medical men that will bring about the greater advancement in preventive medicine, but the education of medical men along lines of dealing with well recognized facts as to the control of preventable diseases that will produce the most good."

Thus I would class crime as one of the preventable diseases. But more is wanted in the way of unbiased scientific inquiry along the many roads my suggestions have simply run over, to make it certain that the game is worth the candle. We know that in a large measure mental abnormalities, seeming mental disintegration, morbid criminality are the direct results of influences antedating the exgenitive life of the being. In the meantime in any case of mental abnormality in a child the physician usually shifts the blame on the parents, and the parents in turn on the physician, until finally, because of the utter lack of cooperation—of the parent, the physician, and society, the psychopathically disposed child really becomes mentally disintegrated and quite degenerate—it remains for the child to then form a new line of congenital degenerates, which go on increasing practically without limit.

The mental powers that youth possesses remain with him through manhood's estate, new dispositions and other faculties may of course arise and alter the balance of character, but brain cells will not proliferate after birth. The problem before us is not how to educate the entire brain given to the child, but to seek means by which the cells of the brain cortex are neither atrophied, morbid, or dead congenitally, and to recognize the fact, which no student of any branch of biology can afford to ignore, that brain disorderliness is due more to progenital influences than any other possible cause.

In conclusion, gentlemen, having thus briefly considered one of the chief causes, if not the chief cause, of all nervous and mental abnormalities, in the history of one effect—the congenital criminal, I feel that I have a right to ask you if this sketch, which science has already drawn, is not to some extent a copy, and not a mere diagram, of the truth? And to assure you that I feel, as I am sure most of you do, that these investigations into the proximate constitution of our race, may be useful and successful, even if their ultimate nature is beyond our ken. The science of medicine, like Bunyan's hero, has often had to pass through the "Valley of Humiliation," but the specters which meet it there are not really dangerous if they are boldly faced. We may be, no doubt are, trusting to some false ideas, erroneous experiments, and envanescent theories in this medical profession, but, without making any insolent claim to being better than our fathers, we may fairly contend that, amid much that is uncertain and temporary, some of the fundamental conceptions, the roots of ideas, are so grounded on reason and fact that we cannot but regard them as an aspect of the very truth. And this question of congenital abnormalities is among the number of those certainties.

Finally, gentlemen, at the beginning of the twentieth century, it is indeed discouraging to the patriot and the physician to perceive how the mass of nervous evils, and at the same time mental and moral weaknesses and crimes, increase in the people, and how many are followed by these abnormalities from the womb to the grave. The faculties of future generations will necessarily be distributed by the laws of heredity. To the physician then belongs the direction of that great power of which we cannot doubt the existence, and from which the race is to receive such benefits, soon as we shall have as a nation learned to understand and apply it. And, to admit a free paraphrasis of a great philosopher and physician, to no nation is a high standard of the human breed more necessary than to our own—the American, for we plant our stock all over the world and lay the foundation of the dispositions and capacities of future millions of the human race.

## MEDICAL PROGRESS.

### HISTOLOGY, PATHOLOGY, BACTERIOLOGY.

**Clinical Significance of the Albumoses.**—The detection and distinction of the albumoses from the other proteids found in the urine as a diagnostic aid in detecting concealed collections of pus has been made the subject of an exhaustive inquiry by T. J. YARROW, JR. (Am. Med., March 21, 1903). Thus far no specific test has been devised for each of the proteids, and the reactions for albumin and the albumoses are pretty much alike. Probably the best reagent for the detection of serum albumin, serum globulin and nucleo-albumin, and for distinguishing them from the albumoses, is salicyl sulphonic acid as advocated by Roche, McWilliam, and the author. It is prepared by treating salicylic with concentrated sulphuric acid. Primary albumoses are precipitated by a saturated solution, clearing up on heating and reappearing on cooling. Deutero-albumose is precipitated when the suspected liquid is mixed with several times its bulk of ammonium sulphate. The urine should always be freed from serum albumin and globulin, and nucleo-albumin, as the characteristic reaction of the albumoses is the clearing up of the precipitate on heating while the serum albumin is thus rendered more cloudy or turbid. (The details of the method of testing will not bear abstracting.) The necessity of examining freshly passed specimens is insisted on as albumoses may be produced by the action of putrefactive or pyogenic organisms. The origin of the albumoses found in the urine in suppurative cases is from the collection and subsequent destruction of leucocytes, so that the products of disintegration, including the albumose constituents, enter the circulation and are eliminated by the kidney. The albumoses of pus have been found by the author to be identical with those in the urine. The value of the test has been proved by the writer in the following cases. In pneumonia it indicates the stage of resolution and may guard against a "false crisis." In differentiating typhoid from malaria when other signs fail, albumoses in the urine would indicate that the stage of ulceration had been reached. It may indicate that ulceration and cavity fermation had begun in pulmonary tuberculosis, as was proved by autopsy. The value is also marked in diagnosticating concealed suppuration from acute inflammatory processes; as shown by its absence in acute inflammatory conditions of the ovary and its subsequent appearance when pus had formed. Suppurative processes in liver, gall-bladder, pancreas, peritoneum, may likewise be distinguished. The author cites numerous cases in which the value of the test, in a great variety of diseases, was confirmed by operation or autopsy and believes that it is in connection with other symptoms, of greater importance than the leucocyte count. In conclusion, attention is also called to the physiological albumosuria following labor and to the fact that the appearance of albumoses in the urine indicates beginning suppuration following traumatisms, such as gunshot or stab-wounds of thorax and abdomen and in meningitis resulting from contusion or fracture of the skull.

**Cryoscopy.**—After discussing the work which has been done by various observers, D. S. GRIM (Phil. Med. Jour., March 21, 1903) presents his own conclusions based on the examination by cryoscopic methods of numerous normal and over 400 pathological urines, the latter including the various kidney lesions, calculus, malignant tumors, diabetes, uremia, valvular and myocardial disease, blood diseases, acute exanthemata, infectious diseases, postoperative cases. He believes that cryoscopy cannot replace, but only supplement the usual urinary tests, although it is probably the most delicate test we possess in detecting and estimating the effect of therapeutic measures directed toward cardiac and kidny lesions. It permits of reasonable accuracy in diagnosing renal insufficiency and the type of renal lesion present. Uremia cannot be diagnosed from the examination of the urine alone. Cryoscopy of urine obtained by catheterization from each kidney, when supplemented by the phloridzin and methylene blue tests, forms a reliable and delicate test of a unilateral kidney lesion and of the degree of insufficiency of the affected kidney.

**Analysis of Fluid in Hydrops of the Gall-bladder.**—The examination included two cases; in one there was a congenital atresia of the cystic duct, in the other the occlusion was due to stones. T. SOLLMAN (Am. Med., March 14, 1903) found that the contents consisted of a dilute solution of true mucin, of the molecular concentrations of the serum, devoid of bile acids and pigments, of ferments and of sugar. Traces of coagulable proteid may be present. No nucleo-albumin was found. The gall-stones producing the obstruction consisted essentially of cholesterin.

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## SATURDAY, APRIL 18, 1903.

### THE ORDINANCE CONCERNING DOGS.

A new rule affecting those who have been in the habit of allowing their canine pets to run at large has been proposed and is under discussion in New York City. Section 672 of the City Code provides that no dog shall be allowed in any public place, save he be accompanied by a competent person, who shall be required to hold the animal securely in a strong leash, not more than four feet long. This measure, however, has been indifferently obeyed, and by many, wholly ignored, until it becomes necessary to enforce it under extreme penalty, or to devise a more practicable and more likely to be adopted scheme. It is now proposed that every dog which ventures beyond the confines of his kennel shall be furnished with an efficient muzzle at his owner's expense, and that failure to comply with such a regulation will mean either the immediate confiscation of said animal by the city authorities, or the payment of a heavy fine.

It is understood that such a method will be opposed by the Society for the Prevention of Cruelty to Animals, and in explanation of the position of that body, its President writes to the New York *Times* as follows:

"The muzzling of dogs, if the muzzle is made really effective, must of necessity cause inconvenience and even distress to the muzzled animal. In some cases this distress is so acute and the nervous excitement which it causes becomes so intolerable that I myself have personally seen a dog tear at the muzzle with such violence as to lacerate its whole face and actually tear the claws out of its own feet. On general principles, then, it is very clear that a society for the prevention of cruelty to animals must deprecate the universal muzzling of dogs unless in some cases of extreme necessity."

A muzzle properly adjusted should certainly produce little or no discomfort, and the "inconvenience" likely to result is far outweighed by the experience of the average pedestrian unfortunate enough to be bitten by a dog, mad or otherwise. The bit in the mouth of a horse is scarcely comfortable, yet it is absolutely necessary to govern his actions,—and, moreover, the horse is a useful animal as well as a pet, which is seldom the case with a dog of the New York variety.

It is rather inconceivable that any sane dog would feel inclined to think so lightly of his anatomy as to tear out his eyes or claws to relieve a nervous excitement, and this would seem to point to the fact that such a dog was already "mad," according to the popular idea.

Continuing, the letter says: "From a long-continued and extensive study we are convinced that rabies is one of the rarest of canine diseases; and we are as firmly convinced as ever that hydrophobia is even more rare."

Possibly rabies is rare enough among dogs, but the inoculation of a human being produces one of the most violent and horrible diseases to which one may care to bear witness; and it certainly was frequent enough in France to attract the attention of Pasteur, who is quite as well known for his success in treating hydrophobia as for anything else he ever did.

The President of the Society believes that if the present ordinance requiring every dog in the streets to be led by a short cord or chain were only enforced, it would be more effective than a muzzling ordinance could be.

However this may be, it seems to us that the leash is an unsafe thing to depend upon, because not every dog is willing to be led peaceably, and in case he suddenly goes mad, the owner is most likely to throw the leash to the winds and to take to his heels (especially if he has been the first victim), rather than to prevent injury and death to those who happen to be in the dog's way.

But in spite of what is believed to be right and just in settlement of the question, the communication ends thus: "Having thus stated our own position briefly but clearly, I have only to add that our society will loyally endeavor to secure the enforcement of any measures that the proper authorities may deem to be most necessary for the securing of public safety."

We can only add that the proper muzzling of dogs and the exclusion of all unmuzzled dogs will in a short time do away with rabies and its even more frightful homologue in man, hydrophobia.

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## THE CALCIUM SALTS AND URIC ACID CALCULI.

Some years ago Professor von Noorden, the distinguished German specialist on metabolism and its disorders, suggested that the employment of the calcium salts, administered in large quantities would be of the greatest practical value in the treatment of nephrolithiasis, due to the deposition of crystals of uric acid in the pelvis of the kidney. Professor von Noorden is known as a thoroughly conservative observer and yet as a scientific clinician perfectly ready to reject long-established formulas with regard to metabolism and its supposed alteratives when experience demonstrates their falsity or insufficiency. His declarations with regard to the lack of foundation for the generally accepted belief that the light meats are less irritant than the dark meats in various forms of kidney trouble and in the so-called uric acid diathesis and his recent declaration supported by clinical experience that an absolute milk diet may in certain forms of nephritis be contraindicated will be remembered as characteristic of his progressive quality of mind.

Notwithstanding his reputation, his suggestion with regard to the use of large quantities of calcium, whenever there is a tendency to the precipitation of uric acid salts in the urine, has not received the attention it deserves. Recently he has announced his results in some 21 cases in which this treatment was employed. Only two recurrences of renal colic are reported after the patients began the ingestion of the calcium salts. In one of the patients the attack that occurred, and it was the only one in the after progress of the case, came on the fourth day after the beginning of the treatment, at a time therefore when the dissolvent action of the calcium salts could scarcely be presumed to have had time to become effectual. In the second patient, with a renal attack, in the previous history there had been renal colic every two weeks for several years. A single attack developed nearly a year after the calcium treatment was begun and there have been no attacks since, though that is now some years ago.

In the *Journal of the American Medical Association,* March 28, 1903, Dr. Alfred C. Croftan reports four cases in which after the development of renal colic as the result of the presence of uric acid calculi patients were advised to use calcium salts continually. All four of these patients were lost sight of for periods varying from two and a half to four years but have all come recently under observation again for other causes than renal colic. Not one of them has suffered from a recurrence of their renal colic during the whole intervening time, though their feeling was one of constant dread at the time that the treatment was undertaken. It would seem that a definite advance in therapeutics for a very obstinate and hitherto rather hopeless condition has been found. Certainly the method deserves to be given a thorough trial by the profession generally.

It is not always easy to decide that a uric acid calculus is present rather than any other, but certain signs at least suggest the diagnosis. Usually the presence of a uratic calculus is accompanied by the passage of granular matter, usually known as gravel. An analysis of this material will give a definite clue as to the composition of the material. For this purpose the collected concretions should be finely powdered, as suggested by Dr. Croftan, and then a portion treated with dilute hydrochloric in a test-tube. If it dissolves with effervescence it is not a uric acid calculus and there is no further need of testing. If none of it, however, or but very little goes into solution, the residue should be treated with an excess of warm dilute hydrochloric acid. Any residue left after this test is almost sure to be uric acid for the sulphates, phosphates and oxalates of lime all go into solution under these conditions. If a small portion of the residue be dried and heated on a piece of platinum foil the presence of an odor of bitter almonds is evidence of the uric acid nature of the material. The well-known murexide test may be used to make the matter certain.

The calcium salts, especially the carbonate of calcium, which has been recommended as the most suitable for administration in these cases, may be given almost ad libitum. Von Noorden has given as high as 15 grams (230 grains) per day for months at a time and has never seen any ill effects from the treatment.

Dr. Croftan suggests the use of 15 to 20 grains three times a day until its effect is noted, when, if deemed necessary, the amount may be increased. As is well understood, individuation is necessary for all remedies that are meant to influence metabolism for long periods. The failure of the recurrence of renal colic and the absence of the uneasiness in the lumbar region that so often accompanies the presence of a uric acid calculus is the sign that the remedy is accomplishing its purpose. At the same time it is advisable to limit the diet with regard to such things as meat and other materials that are likely to favor the presence of an excess of uric acid in the urine and to see that the patient takes an abundance of water. This last is an especially important element of therapeutics and constitutes the most effective factor in many of the much advertised natural waters.

## ECHOES AND NEWS.

### NEW YORK.

**Mount Sinai Hospital.**—The following new appointments have been made: Dr. Florian Krug, Attending Gynecologist; Dr. D. B. Delavan, Attending Laryngologist; Dr. E. Libman and Dr. Albert Kohn, Adjunct Attending Physicians; Dr. F. Leviseur, Adjunct Attending Dermatologist; Dr. Martin W. Ware, Adjunct Attending Surgeon, Genito-Urinary Department.

**Work of a Throat Hospital.**—The Metropolitan Throat Hospital, at No. 351 West Thirty-fourth street, during a period of thirty years, has been the means of affording free medical assistance to a large class among the deserving poor of New York. According to its recently issued report, 27,244 individuals have been received since its foundation, and a total of more than 218,364 visits have been made to its dispensary. A considerable proportion of the cases treated are children who suffer from tonsillar and obstructive affections of the throat. The unavoidable exposures and the restricted living quarters of the poor are causes that lead easily to asthma, chronic bronchitis, and progressive deafness, as well as more obscure ailments which, unless removed, result in permanent ill-health and dependence. In the last year, 1,307 new patients have been treated in the clinics. These have been mostly drawn from the neighboring districts of the West Side, although a proportion come from considerable distances. It is expected that the number of patients from other districts will be greatly augmented as soon as the new operating-room, now in final process of construction, is completed. The old operating-room, although built on sanitary lines, was inconveniently placed at the top of the building, and was reached only by a winding and steep stairway. The new one is located with regard to availability to the wards, and will be complete in every detail of construction. Two additional rooms for the reception of throat and ear patients have also been secured.

**Lectures to State Alienists.**—Dr. Adolf Meyer, Director of the Pathological Institute of the New York State Hospitals on Ward's Island, reports to the Commission in Lunacy that he has just finished the third course of instruction to the physicians of the fourteen State hospitals. These three courses of lectures and clinics have been given by himself and his assistants at Ward's Island during the past winter. In all sixty-one physicians belonging to the staffs of the State Hospitals at Buffalo, Utica, Gowanda, Middletown, Rochester, Ogdensburg, Poughkeepsie, Brooklyn, Central Islip, Kings Park, Matteawan, Dannemora, and New York city have attended the three sessions. The lectures and clinics related to the most recent advances in knowledge of the causes, classification, scientific examination, and treatment of cases of insanity, and the result of the work of the winter thus far has been the stimulation of medical interest and study in the various asylums to a degree never attained before. In order further to perfect the medical administration of the hospitals, the Commission in Lunacy is gradually associating staffs of consulting physicians and surgeons and distinguished specialists in the scientific conduct of the institutions.

Thus far consulting staffs have been selected and appointed at three of the State hospitals. The following is the Consulting Board of the Manhattan State Hospital, East: Drs. Austin Flint, Whitman V. White, Walter R. Gillette, Edward G. Janeway, Carlos F. MacDonald, Allan McLane Hamilton, Joseph D. Bryant, Edward D. Fisher, William H. Thompson, Bernard Sachs, William Hirsch, William C. Lusk, Pearce Bailey, W. Evelyn Porter, John L. Adams, Thomas P. Prout.

The following is the Board appointed to the Manhattan State Hospital, West: Drs. Austin Flint, Walter R. Gillette, Edward D. Fisher, Allan McLane Hamilton, Whitman V. White, Edward G. Janeway, Carlos F. MacDonald, Joseph D. Bryant, Bernard Sachs, LeRoy Broun, Pearce Bailey, Robert C. Kemp, William C. Lusk, Henry H. Whitehouse, Ward A. Holden.

The following is the new consulting staff at the State Hospital at Central Islip: Drs. William H. Ross, William B. Savage, Harold E. Hewlett, James P. Tuttle, L. Pierce Clark, Nathaniel Bowditch Potter, P. R. Turnure.

**State Hospital Graft.**—"Branded as having been introduced under a deception and solely in the interests of Gov. Odell's Newburg grocery store," says the *Sun*, "the Assembly to-day, by a party vote of 80 to 57, passed the bill desired by Gov. Odell, which completes his scheme for the centralization of the control of the State hospitals in Albany. This bill seeks to appoint a purchasing agent who shall buy each year the supplies for the State hospitals, and he is to have his office in Albany. Its passage through the Senate was unattended with any comment, for at that time it was not known what the bill sought to do. But after its passage it was discovered that it was simply another grab on the part of the Governor for more power, and the hint went broadcast that it was in the interests of the firm of J. W. Mathews & Co. No one has come forward to defend it, and the charges of what it proposes to do have not been denied. The Democrats voted solidly against the passage of the bill and declared it was not a Democratic measure, although it was introduced by a Democratic Senator. It also developed how strong a grasp the Governor has on the Lunacy Commission, for the bill was given to Lunacy Commissioner Daniel A. Lockwood of Buffalo, the Democratic member of the commission, and he had Senator Ramsperger introduce it. To-day Assemblyman Burke (Dem., Buffalo), said: 'Every member of this house knows how this bill came to be introduced by Senator Ramsperger. It was an underhanded piece of work upon the part of the State administration. In order to ward off suspicion from the bill it was handed by the Democratic member of the Lunacy Commission appointed by Gov. Odell at a salary and expenses of $6,200, to a Democratic member of the legislature with the understanding that it was only a bill to change the names of certain hospitals and almost before any one had time to consider its provisions the Republicans shoved it through the Senate. Then upon careful consideration the real intent of the bill was discovered to be hidden between the lines.' "

**T. Gaillard Thomas.**—At a meeting of the Medical Association of the Greater City of New York, held April 13, 1903, a committee on the death of Dr. T. Gaillard Thomas presented an elaborate sketch of the distinguished career and eminent services of Dr. Thomas. The conclusion of their report was as follows:

In the death of Dr. Theodore Gaillard Thomas this Society recognizes the loss of one of its most distinguished and most valued members. Its memory of Dr. Thomas will be of a man of keen intelligence, wide cultivation and accomplished skill; a man of purity of character, broad humanity, and strictest honor. (Signed) Henry Freeman Walker, Edwin B. Cragin, S. Beach Jones, Committee.

## PHILADELPHIA.

**Pennsylvania Society for the Prevention of Tuberculosis.**—At the annual meeting held April 8, the President, Dr. Howard S. Anders, in his address said that the fallacy that tuberculosis is hereditary and incurable, is still prevalent. The necessity of a popular educational movement against the disease was emphasized. Dr. Anders was reelected President and Dr. A. H. Davisson was chosen Secretary.

**Appropriations for Philadelphia Hospitals.**—The Jefferson Medical College and Medico-Chirurgical hospitals have each received an appropriation of $260,000 from the State for the purpose of erecting new buildings. The hospital of the University of Pennsylvania receives $175,000 for maintenance and improvements, the latter including an X-ray building and outfit.

**Osteopaths Fail to Gain State Recognition.**—The bill to establish a State Board of Osteopathic examiners, and to regulate the licensing and practice of this class has been defeated in the Pennsylvania legislature.

**Dr. Warthin to Address Pathological Society.**—At the annual conversational meeting of the Pathological Society of Philadelphia, to be held April 23, the address will be delivered by Dr. Alfred Scott Warthin, of Ann Arbor. Dr. Warthin will speak upon "Hemolymph Glands."

**Health and Charities Department Created.**—A bill creating a fourth member of the Mayor's Cabinet has been passed in the shape of the establishment of the Department of Public Health and Charities. The bill provides that: "The Department of Public Health and Charities shall be under the charge of a Director and an Assistant Director, whom the Mayor shall appoint, to which department shall be confided the care, management, administration, and supervision of public health, charities, almshouses, hospitals and all similar institutions, the control or government of which is intrusted to the city. The Director of Public Health and Charities, as chief executive officer thereof shall appoint, supervise and control all the subordinate officers and employes attached to the department, and shall appoint all vaccine physicians and health inspectors; and all hospitals belonging to the municipality where provision is made for the care of contagious diseases shall be under the immediate supervision and control of the Director of Public Health and Charities."

**Recovery Following Operation for Rupture of the Liver.**—This case was reported, and the patient exhibited at the Academy of Surgery, April 6, by Dr. Thomas R. Neilson. The patient was admitted to the Episcopal Hospital on a Saturday, with the history of having fallen from a ladder the preceding Wednesday. He fell a distance of twelve feet, and struck his right side on the edge of a pew. After the injury he walked home, was in bed the following day, but was out on the second day. He then became worse, and was finally taken to the hospital, where it was found that the upper right segment of the abdomen was tender on pressure, the remainder of the abdomen being somewhat tympanitic. There was a small amount of blood in the urine. The diagnosis of rupture of the liver was made, and the abdomen opened through the right rectus muscle. The capsule of the liver was found to be greatly distended and to contain a small opening over a laceration of the posterior border of the right lobe of the liver. A large amount of blood was evacuated, and the laceration packed with iodoform gauze, which was carried out through the primary incision, and also through a second incision made between the eleventh and twelfth ribs. This packing was left in for twelve days. No bad symptoms followed operation, and the patient left the hospital on the forty-third day. The favorable outcome is attributed by Dr. Neilson mainly to the fact that there was only a small rent in the capsule of the liver. Emphasis is also placed on the value of posterior drainage.

**Three Successful Operations for Perforation in Typhoid Fever.**—This paper was read by Dr. Richard H. Harte. The first patient was a man, aged twenty-nine years, operated on five hours after perforation in the third week of the disease. The wound was irrigated with salt solution, closed with silk sutures, and a glass drainage tube reaching into the pelvis inserted. Convalescence from operation was uneventful. On the sixty-third day empyema developed and rib resection was performed. The man was discharged on the eighty-third day. The second patient was a man, aged thirty-nine years, in bad condition from walking typhoid. The perforation was closed with silk and the diseased appendix removed. The abdomen was irrigated with salt solution, followed by equal parts of salt solution and hydrogen peroxide, and finally by salt solution. The patient had two typhoid relapses after the operation, being discharged from the hospital at the end of three months. The third patient was a child, aged thirteen years, operated upon on the forty-sixth day of the disease, there being in addition to two perforations of the ileum a gangrenous appendix with abscess formation. This wound was flushed with three solutions as in the preceding case. In all the cases the effort to finish the operation as quickly as possible was the leading idea.

**The Mortality of Operated Cases of Typhoid Perforation.**—Dr. Harte has collected 333 cases of operation of typhoid perforation, which he divides into several groups, according to the years in which they were operated upon. The mortality has been slowly decreasing, being 90 per cent. in the first series and 69 per cent. in the last. Dr. Harte has personally operated upon 13 cases with a mortality of 76 per cent. Many of these patients were in collapse when operated upon. Though the surgeon has to depend largely upon the physician for the diagnosis, as the latter sees the cases first, Dr. Harte does not agree with the common statement that physicians are slow in making the diagnosis. From his experience in these cases he thinks that the diagnostic acumen of the physicians with whom he was associated was just as clear as would have been that of his surgical colleagues. In these cases there are two conditions to be borne in mind—perforation from typhoid ulcer and perforation from appendicitis. No one can make the diagnosis between the two. The mortality must be greater in typhoid because the lesion is not walled off as in appendicitis. One important factor in the diagnosis of a typhoid perforation is rigidity which, if persistent, demands prompt interference. If the surgeon waits until reaction from shock takes place, it will be too late in the majority of cases. Many of these patients will react, when the abdominal cavity is opened. The lateral incision is better than the median. When the peritoneum is opened the operator should examine around the head of the colon. If this is not involved carry the hand into the pelvis, and if no lesion is found there, it is safe to conclude that a mistaken diagnosis has been made. Time can sometimes be saved by two persons looking for the perforation at the same time, one for each side of the intestine. Flushing the abdomen is preferable to wiping with gauze. Drainage is imperative and gauze makes the best drain.

## CHICAGO.

**Hydrophobia; Measures for Prevention.**—Dr. Arthur Dean Bevan read a paper on this subject before a recent meeting of the Chicago Medical Society, in which he depicted in a graphic manner a boy dying from this disease. He briefly reviewed the essential facts connected with hydrophobia, and among other things he said it is not a myth, but the most terrible and fatal of all diseases. No human being ever recovers from it after the first symptoms manifest themselves. He narrated the history of the disease in man, referring to the bite, the premonitory stage, the stage of excitement, and the stage of paralysis. Coming to the value of the prophylactic Pasteur treatment, he said that in France the value of this treatment is generally accepted, while in Germany there is still much skepticism in regard to it. In America, the Pasteur treatment has been fairly generally accepted, and the results from the Pasteur Institute in Paris appear very convincing. In the light of present knowledge, he believes it is the duty of the medical profession to recommend the Pasteur preventive inoculation in cases of bites from proven or strongly suspected rabid dogs. Can hydrophobia be prevented? Yes. It has been practically eradicated from England and parts of Germany by systematic muzzling and quarantining of dogs. Since the first of the year there have been many cases of the disease among dogs in Chicago. There is, in fact, danger of a widespread epidemic of the disease in this city, and there is an increase in the number of human victims. The existing dog laws in the city of Chicago are inefficient, and are not effectively enforced. There are to-day a large number of homeless and ownerless dogs roaming the streets, which are a menace to the really valuable dogs and to the people, and no effort is made to rid the city of this menace. He urged the enforcement of the present dog law, and at the conclusion of his paper, offered the following: "That the Chicago Medical Society, through its Board of Councillors, call the attention of the city authorities to the fact: (1) That the disease hydrophobia is prevalent in the city of Chicago; (2) that it is possible to practically eradicate the disease by proper dog laws, rigidly enforced; (3) that the Mayor and Common Council be petitioned to immediately take such steps as are necessary to accomplish this result." The resolution was adopted. The day following the reading of Dr. Bevan's paper, Mayor Harrison, realizing the great danger to which citizens are exposed from bites of rabid dogs, gave orders to the Chief of Police to enforce the dog law. This is being done.

**An Instrument for Measuring the Rate of Coagulation.**—Dr. Wm. A. Evans read a paper in which he stated that in several diseases coagulability of the blood is a point of some diagnostic, prognostic or therapeutic import. Some of these are liver diseases, especially gall-stones, and the other conditions producing jaundice; the hemorrhagic diseases, hemophilia, purpura, scurvy, sepsis, diseases giving petechiæ as phenomena, leucemia, diabetes and pregnancy. Some gall-stone cases bleed to death after operative procedure; hence a better knowledge of the coagulability of the blood, a more efficient way of gauging it, would permit of more opportune operating, and also teach us how to build up coagulability. Pregnant women are in some danger of death from bleeding. While much of this danger is due to elements other than decreased coagulability, at the same time, he asked the question, Should we not watch coagulation in pregnancy as we now watch the urine? But this will require some simple, fairly accurate method. Reference was made to the methods already employed.

Dr. Evans submitted an instrument of his own design. It consists of a small copper bucket. This bucket, when ready for use, holds 150 c.c. The dimensions are: 8 cm. high; 6 cm. in diameter; height of cell, 7 cm.; diameter of cell, 2.5 cm.; length of tube, 5.5 cm.; outside diameter of tube, .3 cm.; diameter of lumen of tubes, .025 cm.; number of tubes, 12.

The tubes have a small rubber attachment. The outside bucket is wrapped with asbestos and covered with leather. The inside of the cell is lined with felt. Small cleaning wires go with the outfit. The apparatus is made by Leitz & Co. The following is the method of use: Scrub the finger with soap and water, then with water, then rub very briskly to dry and also to produce some local congestion. Cover the finger with the gauze or towel. Second, fill the bucket with water at 50° C. (hot tap water is 55° C.); place the tubes with rubber tubing attached in their cell. Leave this for several minutes. Empty the water from the bucket and refill with water at 50° C. Third, rub the finger briskly; remove everything that is adherent; puncture. Fourth, suck about one inch of blood into a tube, pull off the rubber, reverse the tube, and drop it in the cell. Repeat this until you have used six to twelve tubes. These tubes must be filled in one-half minute, or less. Note the time on paper. Cover the cell. In three minutes blow a tube into a small porcelain dish filled with water. Empty a tube every half minute, minute, two or three minutes, according to circumstances, until you find one from which you cannot blow the blood, or in which the blood blown into the water is clotted. Note the time at which each tube was emptied. Clean out the tubes with the wire.

In order that a technical procedure may be acceptable for daily clinical use, it is necessary that it should fulfil three requirements: (1) It must be simple in construction; (2) easy of use; (3) it must be uniform enough for purposes of comparison. As to the first, the apparatus shown is ideally simple. The tubes are more easily cleaned than those of the Thoma Zeiss counter; they offer less difficulties than the tubes of the Fleischl hemometer. To use this instrument, the speaker said it requires a little technical skill, but less than for the Fleischl hemometer and Thoma Zeiss counter. It is necessary that all the tubes be filled in half a minute or less. If a longer time is required, then the tubes should be grouped and separate entries of time for each group should be made. Quickness is the main thing to learn. The claim is not made that this is an ultimate analysis or a thing correct to the third decimal point. It is claimed that conditions are nearly enough uniform so that comparison can be made between healthy blood and diseased blood; between diseased bloods of the different kinds, and between coagulability of the same diseased blood at different times. As to uniformity of temperature, the essayist submitted a table showing the variation in temperature. In conclusion, the author spoke of our present information as to the rate of coagulation in different diseases, quoting from Da Costa, Cabot, Parmentier and others.

**Acute Myelogenic Leucemia.**—Drs. Frank Billings and Joseph A. Capps presented a joint paper on this subject, in which they quoted a case of leucemia, which ran an acute course and terminated fatally in two months. The onset resembled an infection through the cavity of a decayed tooth, which caused necrosis of the bone. The symptoms were fever, moderate enlargement of the spleen, slight swelling of the cervical glands, hemorrhages, and rapidly progressing anemia. The blood counts gave from 540,000 to 374,000 white cells, the majority of which were myelocytes, and large mononuclear cells resembling myelocytes. The writers have found six other cases of undoubted acute myelogenic leucemia in the literature, and two probable cases. They based the diagnosis chiefly on the presence in large number of myelocytes, and on granular mononuclear cells resembling myelocytes.

There is an important difference between diphtheria and influenza, in that diphtheria is chiefly a toxemic disease, while influenza is both a toxemic and bacteriemic disease, consequently the number of complications which may follow after influenza are very much greater than those which follow after diphtheria. For instance, after diphtheria meningitis is practically an impossibility, but it is not at all uncommon after influenza. The effects, then, of the influenza bacillus may be summed up in two words, the toxemic effect and the bacteriemic effect. There should be added still another characteristic of the influenza bacillus, and that is its pyogenic nature. Cases of abscess of the cerebellum have been reported in which neither streptococci nor staphylococci could be found, but merely pure cultures of the influenza bacillus. The peripheral neuritides and psychoses were dwelt upon at length.

**Chicago's Health.**—Of the total 207 cases of the contagious diseases reported during the week, 87, or nearly one-half, were of measles, and during the first three months of the year 69 deaths were reported from this disease as against only 20 during the corresponding period of 1902. This is two and a half times as many as last year, and in proportion to population it represents an increase of very nearly one-third over the average of the previous ten years—the ten-year average rate being 0.94 and the 1903 rate being 1.22 per 10,000 of population.

Next to scarlet fever, measles is the most serious of the diseases of childhood in its after-effects upon many of those who recover. Deafness—with consequent arrested mental development—is a not uncommon result and pulmonary tuberculosis (consumption) is another.

Only less serious than measles in the after-effects and complications is whooping cough, which is also epidemic and much more fatal. Since the first of the year it has caused 129 deaths, as against 49 during the corresponding fourteen weeks of last year.

All the contagious disease germs have manifested unusual prevalence and activity since last December. There have been ten deaths from tetanus, or lock-jaw, since January, and the prevalence of rabies, or hydrophobia, has been heretofore commented on. The strict enforcement of the dog-muzzling ordinance, ordered by the mayor during the week, will undoubtedly control the present situation as to rabies, but there should be no exceptions to such enforcement.

## GENERAL.

**Medical College for Women in China.**—The first medical college for women in China has recently been opened at Canton. The pupils now number thirteen, and sixty young Chinese women are preparing for entrance next year.

**Seventh International Congress of Otologists.**—This Congress will be held at Bordeaux, August 1 to 4, 1903. Dr. Moure will preside.

**The Effect of Blue Light.**—Dr. Minine, Director of the Nicholas Hospital at St. Petersburg, has discovered that the blue rays of light have the power to allay pain. He made practical application of the discovery in a surgical operation, in which the blue rays of electric light were projected upon the area treated. The operation lasted twenty minutes; and though the patient was not anesthetized, no pain was experienced.

**Thirteenth Congress of Alienists and Neurologists of France and French-Speaking Countries.**—This Congress will open in Brussels, August 1, 1903. The program will include: (1) Subjects assigned at the Grenoble Congress, 1902: (*a*) Psychiatry: Catatonia and Stupor, Dr. Claus (of Anvers); (*b*) Neurology: Histology of General Paralysis, Dr. Klippel (of Paris); (*c*) Therapeutics: Treatment of Agitation and Insomnia in Nervous and Mental Diseases, Dr. Trenel (of Saint Yon). (2) Various papers, demonstrations, etc.

**Army Suicides.**—A French student has been investigating the subject of suicides in the armies of Europe, and has reached some curious results. Everywhere, except in Russia, the number of military suicides is decreasing; in that country, however, the average for some years past has been 133 in every 100,000. In France the proportion now is 18 in 100,000; in Italy, 24; in Germany, 36, and in Austria, 105 to every 100,000. In civil life in this country the Germans provide the largest proportion of suicides; it is curious to find them surpassed in Europe by the Austrian and Russian soldiers. The different arms of the services commit suicide in differing proportions. In the French Army self-murder is commonest among the men of the Foreign Legion, of whom 99 in 100,000 commit it yearly, and least common among those of the Garde Républicaine, only 14 of whom kill themselves to each 100,000. The French cavalry provides more suicides than does the infantry, the infantry more than the artillery, and the engineers the smallest number. In the British Army the suicide rate is about 23 to the 100,000 at home and 30 per 100,000 in India. In 1898-99 the rate in our regular army was about 47 per 100,000; it is lower now, the strain of war conditions having lessened.

**Trips from New Orleans.**—Among the large number of attractions that are being arranged for the entertainment of the members of the American Medical Association and their friends, at the meeting in New Orleans May 5 to 8, is an excursion from New Orleans through the Sugar Cane, Rice and Oil fields of Louisiana and Texas to the historic, quaint and beautiful city of San Antonio, where the old Alamo, "the Shrine of Texas" liberty is preserved by the State, and contains many valuable relics of the Lone Star Republic; at the exceedingly low rate of $17 for the round trip. This includes railroad fare, and berth in an up-to-date Pullman car, and the exclusive use of the same for three days, the length of the trip; there never has been such an excellent opportunity offered before to see Texas under such advantageous circumstances. Just think, three days of recreation and pleasure in Pullman palace cars, with elegant dining cars attached so that you can have your meals served at your pleasure. The itinerary of the trip will be about as follows: A few hours' stop at Beaumont, Texas, to visit the wonderful "Spindle Top Heights;" the greatest oil field in the world; and a few hours in Houston, Texas, where the local profession and citizens of that city will welcome the visitors and show them the interesting features of this city. A night run from there to San Antonio, where they will leave the cars at the Hot Sulphur Baths, and after breakfast every member of the party will be complimented with a hot sulphur bath, and then the Missions, the Parks, and Fort Sam Houston, one of the largest and finest Forts in the United States, will be visited; in the evening a Mexican supper will be served at the beautiful "San Pedro Springs Park," after that the start on the return trip will be made, stopping for a few hours the next day at Crowley, Louisiana, the home of the great Gulf Rice Industry, and a daylight ride from there through the beautiful Cane Fields of Louisiana to New Orleans. All those desiring to take advantage of this delightful opportunity to visit Texas and see the Alamo will please notify Dr. J. M. Head, San Antonio, Texas, who has the matter in hand, as it will be necessary for as many as five hundred to make this trip in order to get the above very low rate.

A special party will be conducted through Mexico, stopping at the principal points of interest to the City of Mexico, by a gentleman thoroughly conversant with the history of the country and the Spanish language, for $35 for the round trip from New Orleans and return, if as many as one hundred will make the trip. This is an opportunity that should not be missed to visit our sister republic with its quaint customs and people, its beautiful scenery and historic interests, the home of the earliest civilization or semi-civilization of the Amercan Continent.

**Anthrax in Louisiana.**—A serious condition of affairs prevails at Prairie Nammou in Acadia parish, due to an epidemic of anthrax. About 225 head of stock have died . The small farmers, ignorant of the virulence of the disease, skinned some of the dead animals and sold the skins. As a consequence there are thirteen human beings sick with anthrax.

**Charity Supervisors Outline Plans for Hardesty Farm, Maryland.**—The supervisors of City Charities, at their regular meeting at Bayview last week, appointed Dr. Henry D. Purdum resident physician to the insane department for the year beginning May 1. Dr. Purdum has been acting as resident physician for some months past. The Supervisors have examined carefully the Hardesty farm adjoining Bayview Asylum, which has just been purchased by the city, and have consulted Dr. Henry M. Hurd, Dr. William H. Welch, Dr. Fulton, Secretary of the State Board of Health, and other specialists as to improvements in the hospital service at Bayview now made possible. The plan. they say, is to put up on the Hardesty farm a small hospital for the consumptive patients now in Bayview Asylum, and for such others as may come under the immediate care of the Supervisors.

**For Mountain Tuberculosis Hospital.**—Plans are being made by the trustees of the Hospital for Consumptives (the Eudowood Sanatorium), at Towson, Maryland, for the extension of the usefulness of that institution by the establishment of a branch of the hospital at some place to be selected in the Blue Ridge Mountains. The Quarter Club, which was organized a year ago for the purpose of raising a fund for the establishment of a mountain sanatorium for the treatment of consumption, has been invited to cooperate in the movement and to consolidate with the hospital organization. Though final action has not yet been taken by the club, the plan has met with general approval, and it is expected that the union will be effected.

**New York Insane.**—Dr. Frederick Peterson, of New York, last week delivered an address before an audience of physicians at the quarters of the Medical and Chirurgical Society, Baltimore, his subject being "State Care of the Insane." He described conditions under which insane people were treated 20 years ago in New York and contrasted them with those of to-day, graphically describing the progress that had been made. He spoke of the training schools for nurses, the electric instruments and ambulances and the improvement in the moral conditions, and described the methods used in the management of great State hospitals of the Empire State, subjecting the system of caring for the insane which is now firmly established to a detailed and exhaustive analysis.

**New Jersey State Medical Examiners.**—The State Board of Medical Examiners of New Jersey has secured amendments to the Medical Practice Act of that State by which the academic standards for admission to the State examinations have been raised from a competent school education to a diploma issued after four years of study in a normal, manual training or high school of the first grade in that State, or its equivalent. The medical requirements have been increased from three to four courses of medical lectures of at least seven months each, in different calendar years, prior to receiving the degree of Doctor of Medicine. The amendments go into effect on July 4 next. After that date, candidates for examination or for endorsement of a license issued by a recognized Examining Board of another State, will be obliged to comply with the new standard of requirements for a New Jersey license.

**Increase in Cancer in Ireland.**—The report of the Registrar General for Ireland on the prevalence and distribution of cancer shows that there has been a steady increase in the disease in that country. The number of deaths in Ireland in 1871 from that cause was 32 per 100,000 of the population; during 1891, 46 per 100,000; and during 1901, 65 for the same approximate figures. In England and Wales the death rate between 1871 and 1900 rose from 42 to 83 per 100,000, and in Scotland from 44 to 80. The returns from Bavaria, Holland, Norway, Austria and Prussia show a distinct increase in the death rate for the ten years ending in 1900. The returns from the United States tell the same story, but the percentage in that country goes up much more slowly. In Ireland the County Kerry suffers the least, the deaths being less than 30 per 100,000. The West of Ireland generally, comes next. The strip of country from Londonderry to Dublin averages from 70 to 90 per 100,000. The Carlow-Loughall district exceeds 160 per 100,000, as does also the Crossmaglen district in the extreme southwest. No explanation can be found for the physical features on the geography, except, possibly, the damp climate and the cold, clayey soil. The Registrar points out certain facts, which have been substantiated by the information he has collected. He says: "Cancer is spread or generated by unwholesome food in dwellings which are generally in an unsanitary condition. Wounds and injuries are sometimes provocative of disease, as irritation of the lips by excessive smoking: but cancer generally seems to be a constitutional disease. Where one member of a family has been affected by cancer, others often suffer with tuberculosis, and sometimes even with epilepsy, lunacy and idiocy. In many cases it is hereditary, and also to a certain extent infectious. It has been contracted through the lips by using the pipes of sufferers. More than one case has been observed to occur in different families living in the same house, or among those who go from one occupation to another, so I seem to be justified in concluding that the disease is to some extent contagious and infectious." Many English doctors are now convinced that the eating of pigs' flesh in different forms is greatly responsible for the increase of the disease, pointing out that it is most common among the poor, whose chief meat is that of pigs, which is also the case in Ireland, while the disease is extremely rare among the Jews.

**Jonathan Hutchinson and His Fish Theory.**—Jonathan Hutchinson has returned to England after a tour of investigation in India as to the cause and prevention of leprosy, especially in reference to the hypothesis which assigns the foremost position among the causes of the disease to the use of unwholesome food. Twelve years ago the Prince of Wales's committee, which was sent to India, rejected this hypothesis, but Dr. Hutchinson's latest investigations have convinced him that the committee if it had pursued its researches more deeply would not have rejected it. Dr. Hutchinson's general conclusion is that the facts do not controvert the hypothesis, while some of them afford unassailable support of it, the truth of which his inquiries in South Africa last year convinced him. Dr. Hutchinson's tour of India included visits to Colombo, Madras, Lahore, Calcutta and Bombay, where he held public meetings and discussions, and also visits to the leper asylums at Colombo, Madras, Calcutta, Purula, Asonal, Agra, Tarntaran, Jullundur and Bombay. He visited in Ceylon all the lepers who had been fish eaters. In Madras and Calcutta each of the lepers with the single exception of a high-caste Brahmin, denied that they had ever eaten fish. In Bombay there was one doubtful exception. In Agar, Tarntaran and Jullundur there were several exceptions. Of the 500 inmates of the Purulia asylum, all had habitually eaten of fish, and many believed that this had caused the disease. Some had left off eating it on that account. The majority of those who had not eaten fish were patients who had contracted the disease in early life. In accounting for these, Dr. Hutchinson suggests "commensal communication" spreads the disease to a slight extent in a community where it has once originated, without it becoming contagious in the ordinary sense of the word. Commensal or mouth of communication, conveyed the disease by eating food directly from the hands of a leper, or otherwise receiving the bacillus by the mouth. The prevalence of the disease in the whole population of India is not greater than five in 10,000, which is about the same percentage as in Norway, but not a single district is entirely free from the disease. It is always more prevalent in or near the fishing places. In Ceylon, where the fisheries are so unproductive that the greater portion of fish consumed must be imported, the incidence of leprosy is less than two per 10,000. In Minicoy, the adjacent fish-exporting island, where the inhabitants eat fish four times a day, the percentage is 150 in 10,000. In the Bombay asylum there are 400 inmates, the majority of whom are from the great fishing district of Konkan. During eight years there have been no Jains and only one Parsee patient. The Jains are strict vegetarians. During the same period the island of Salsette, which has a population of 50,000, was the only Christian community which sent patients to the asylum. The Salsetters are all Roman Catholics who observe all fast days and the majority of them are actually engaged in the fishing trade.

**Increase in the Medical Corps of the Navy.**—The Fifty-seventh Congress in its last session provided for an increase of 150 numbers in the Medical Corps of the Navy, 25 of which are to be appointed each calendar year for six years. By the enactment of this law there is afforded to the young physicians of the country an opportunity to take service in the Navy of the United States and an assurance of the continuance of this opportunity for the next six years. The number of vacancies in this Corps occurring from retirements, resignations, and casualties average about ten a year, which, added to the 25 created by new legislation, makes 35 appointments open to ambitious young medical men yearly.

These appointments are to be made in the grade of assistant surgeon and are within the reach of any well-qualified physician between the ages of 21 and 30 who is a citizen of the United States. Examinations to determine the fitness of candidates for appointment are held in Washington, D. C., and at Mare Island, Cal., and the boards of examiners are in continuous session throughout the year. It is not only necessary for any physician of the required age and citizenship desiring to enter the Medical Corps of the Navy to apply to the Secretary of the Navy for permission to be examined to ensure being given an opportunity. No political or other influence is required, and the only testimonials needed are those bearing on moral standing and citizenship.

The examinations to determine the fitness of candidates for these appointments are conducted in the following order: (1) physical; (2) professional; (3) collateral.

The physical examination is thorough, and the candidate is required to certify, on oath, that he is free from all mental, physical and constitutional defects. Acuteness of vision $^{12}/_{20}$ for each eye unaided by glasses, but capable of correction by aid of lenses to $^{20}/_{20}$ is obligatory. Color perception must be normal and the teeth good. If the candidate is found to be physically disqualified his examination is concluded. If found to be physically qualified his examination is continued as follows:

(1) Letter to the board describing in detail his general and professional education.

PROFESSIONAL EXAMINATION.

| | Written questions. | Percentages required. |
|---|---|---|
| Anatomy (2) and physiology (1) | 3 | 80 |
| Surgery | 3 | 85 |
| Medicine | 3 | 85 |
| Pathology (1) and microscopy (1) | 2 | 60 |
| Obstetrics (1) and medical jurisprudence (1) | 2 | 60 |
| Materia medica and physiological action of drugs | 2 | 80 |
| Chemistry (2) and physics (1) | 3 | 60 |
| Hygiene (1) and quarantine (1) | 2 | 80 |
| General aptitude | | 80 |
| Literary and scientific branches | | 80 |
| Required aggregate | | 750 |

Bandaging; tourniquets; four operations on cadaver; clinical cases (a written report being made in one case, giving history, diagnosis, prognosis, treatment, one prescription, at least, being written out in full in Latin); urinalysis (chemical and microscopical examination of one specimen of urine); practical microscopy, and recognition of five mounted specimens (histological, pathological, and bacteriological); recognition of surgical instruments.

*Oral Examination.*—This follows the written work in each branch and the required percentage is made up from the combined results of the written and oral examinations.

The percentages given are not absolute, however, as losses in some branches may be made good in others, provided the standard is reached in the cardinal subjects of anatomy, physiology, medicine, and surgery.

*Collateral Examination.*—This embraces spelling, punctuation, the use of capital letters, grammar, arithmetic, geography (descriptive and physical), languages, history, general literature, elementary botany, geology, and zoology. While due credit is given for a knowledge of languages and the sciences it is not essential except in the case of physics. A knowledge of the common school branches is essential, and deficiency in this respect will cause rejection even though passing marks may be gained in professional subjects.

These examinations, while necessarily thorough and comprehensive, are simple and practical, and are not beyond the attainments of any well-educated physician. The oral and written questions are similar to those asked by the best medical colleges in examination for graduation.

The future prospects of the medical officer of the Navy, both for promotion and professional opportunity, are very bright, and the plan of enlargement of the Naval establishment already adopted and authorized, as well as that in contemplation, gives assurance that this outlook will grow even more promising.

The Medical Corps of the Navy consists to-day of the following numbers and grades: One surgeon general with the rank of admiral (equivalent to brigadier general in the Army); 15 medical directors with the rank of captain (equivalent to colonel in the army); 15 medical inspectors with the rank of commander (equivalent to lieutenant colonel in the Army); 85 surgeons with the rank of lieutenant commander (equivalent to major in the Army); 23 passed assistant surgeons with the rank of lieutenant (equivalent to captain in the Army); 56 assistant surgeons with the rank of lieutenant, junior grade (equivalent to first lieutenant in the Army), with 152 vacancies. There are 27 vacancies in the grade of assistant surgeon for the year 1903.

Assistant surgeons, after three years' service as such, will be eligible for promotion to the next higher grade—that of passed assistant surgeon—and from a study of the above table it may be observed that the small number of passed assistant surgeons insures promotion to the middle grade—that of surgeon—after a short period of service. To illustrate, the junior officer of the grade of surgeon to-day has reached this grade after less than five years' service and is in receipt of a salary of $3,000 per annum. While this is somewhat exceptional, the prospects of promotion to this grade for the assistant surgeons now entering the service are very nearly as good.

The following is the pay table of the Medical Corps of the Navy:

| | At Sea. | On Shore. | Allowance per Annum.* |
|---|---|---|---|
| Assistant Surgeons, rank of Lieutenant (junior grade) | $1,650.00 | $1,402.50 | $288.00 |
| Passed Assistant Surgeon, rank of Lieutenant | 1,980.00 | 1,683.00 | 432.00 |
| After five years in the service | 2,160.00 | 1,836.00 | 432.00 |
| After ten years in the service | 2,340.00 | 1,989.00 | 432.00 |
| Surgeons, rank of Lieutenant Commander— | | | |
| After ten years in the service | 3,250.00 | 2,762.50 | 576.00 |
| After fifteen years in the service | 3,500.00 | 2,975.00 | 576.00 |
| Medical Inspectors, rank of Commander— | | | |
| After fifteen years in the service | 4,000.00 | 3,400.00 | 576.00 |
| Medical Directors, rank of Captain— | | | |
| After fifteen years in the service | 4,500.00 | 3,825.00 | 720.00 |
| Surgeon General, rank of Rear Admiral | 5,500.00 | 5,500.00 | 720.00 |

The professional opportunities afforded the officers of the Medical Corps are very good at present, and are constantly improving. The first assignment to duty of a newly appointed assistant surgeon is usually to some one of the fourteen naval hospitals, where he remains until the opening of the course at the Naval Medical School in Washington, early in October. At the naval hospitals the service is most instructive and valuable, the larger of these institutions having a capacity of from 150 to 200 beds, and at most times carrying a full quota of patients. The Medical School is essentially a post-graduate school, designed to fit the young officer for the intelligent application of his professional knowledge to the requirements of the naval service, and to give him a training in certain specialties peculiarly important to naval work and in which he has not had the opportunity or time to perfect himself in his college course. The course of instruction comprises the following subjects—Military medicine, military surgery, tropical medicine, naval hygiene—its chemistry and biology—quarantine, the duties of medical officers, hospital corps drill and administration, ophthalmology, naval law, manual of the sword and extracts from tactics, instructions in signals. Bacteriology, blood examination and the study of animal parasites form very important branches of this course and are given in one of the most modern and fully equipped laboratories in this country. Five months is devoted to this school work, and after its completion the assistant surgeon is assigned to sea duty. Here, again his work follows the line of advanced medical and surgical procedure. He is provided with the latest and best instruments of precision and operation, and is given every encouragement to perfect himself in the practice of his profession. The most recently constructed battleships and large cruisers are equipped with hospital facilities equal to those found in most of our best organized small cities. Vessels of this type carry a crew of from 600 to 700 men, and for the care of the sick of these small villages afloat there is furnished for the medical officer a small hospital of from 20 to 30 beds, an isolation compartment, a dispensary, and an aseptic operating room. These are equipped with every modern appliance for the prevention of disease, the care of the sick and wounded, for operative procedure, and for the prosecution of scientific investigations as far as practicable aboard ship. Other duties to which naval medical officers are assigned are those pertaining to the needs of navy yards, naval stations, receiving ships, and recruiting work. Opportunity frequently occurs also for attendance of medical officers upon the meetings of medical and other scientific societies both at home and abroad as the accredited representatives of the Navy Department and the Government.

**Misuse of the Word Lorgnette.**—Dr. W. L. Pyle, in a recent issue of *American Medicine* says, "With due deference to the authority of common usage, there seems good reason for believing that the ordinary interpretation of the word lorgnette, as used in American ophthalmic practice, is not correct. The word is derived from the French *lorgner,* to spy or peep; perhaps allied to *loren* of German dialect. In all the standard French dictionaries the word *lorgnette* is distinctly defined as an opera-glass or a spyglass, while the word *lorgnon* is used to indicate an eyeglass or eyeglass mounted on a handle, or, to be more explicit, a quizzing glass. *Lorgnon à deux branches* is a double eyeglass. There is, however, the French term *lorgnette de spectacle.* Worcester defines lorgnette as an operaglass, giving Spiers as the authority. The last edition of Webster interprets lorgnette as an operaglass; *pl.* elaborate double eyeglasses. The *Century* dictionary defines lorgnette first as an operaglass, but gives a second definition as an equivalent to lorgnon. Lorgnon is described as an eyeglass or a pair of eyeglasses shutting into a frame, which, when in use, serves for a handle intended for examining objects at a little distance. This is a perfect description of the common American acceptance of the word lorgnette.

"She raises to her eyes of blue
Her lorgnon, as she looks at you."
—*The Atlantic,* lxiii, 649.

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*Only when quarters are not furnished by the Government. Eight cents a mile is the allowance when traveling under orders.

It is also stated in the *Century* that lorgnon is sometimes used synonymously with operaglass or lorgnette. The definitions of lorgnette in the Standard dictionary are: 1. A pair of eyeglasses carried on a long ornamental handle, into which glasses shut when not in use. 2. An operaglass, especially one with a long handle. Lorgnon is made synonymous with lorgnette and is also defined as a monocle.

**Age of German University Professors.**—Dr. F. Eulenburg, privat-docent in the University of Leipzig, has published in the *Jahrbücher für Nationalökonomie und Statistik* a lengthy article dealing with the age of the active full professors in the universities of Germany as also of the German universities in Austria and Switzerland. It is practically exhaustive, only about two per cent. of the complete data being wanting, so that it covers 1,288 professors for the winter term of 1890-91, and 1,429 for the winter term of 1901-02. According to these statistics, the average age of the full university professors at present is 53.4 years, which is two years above what it was a decade ago, when it was 51½ years. The highest average age is found at the ten Prussian universities, where it is 54.5 years, and the lowest average in the three universities of Switzerland, where it is 51.8. It is significant that the smaller universities exhibit a smaller average than the larger; this is explained by the fact that usually men do not gain an entrance into the faculties of the larger until they have been tried and found approved in the smaller. In different departments the average varies considerably. In the case of the 201 theological professors it is 54.2; of the 226 law professors, 54.2; of the 295 medical professors, 54.8; of the 707 men in the several departments of the philosophical faculty, 53.1. That the average among the medical men should be the highest is readily explained by the fact that the rush to this department is especially great, and that the number of assistant professors and privat-docents is very large. On the other hand, the law faculties have not been attracting so many candidates, and the chances for earlier promotion are accordingly greater. The highest averages are reported from Berlin, Königsberg, Munich, and Leipzig; which can readily be explained in the case of the first, third, and fourth, as these leading universities are the Ultima Thule of the German savant's ambition. The youngest full professors are found in Bonn, Heidelberg, Vienna, and Strassburg, in the non-theological faculties, and in Tübingen, Marburg, Innsbruck, Erlangen, and Giessen in all departments. There are only two full professors under thirty, both in the law department, one in Tübingen, and the other in Bern. About four per cent. of the professors continue in the harness after they have passed their seventieth year, but it should be remembered that in Austria, as in the German provinces of Russia, professors are retired by law when they reach this age. Eulenburg suggests that the German states pass a law giving the incumbent of an academic chair the right to retire at the age of sixty-five with a pension, and making this compulsory, except in rare cases, at the age of seventy, but in each instance, in the latter case, making the incumbent Professor Emeritus and giving the "Lehrauftrag" to a younger man. This, he declares, would be justice to both students and professors. His discussion has an added interest when compared with the paper published in 1876 by Laspeyres on the same subject.

**Isolation and Contagion.**—The *Times* says editorially "The report of the Registrar General of Great Britain showing that diphtheria is about five times as prevalent in proportion to the population as it was twenty-five years ago, and is now most prevalent in towns which have isolation hospitals, has started a controversy as to whether isolation hospitals may not be a mistake, which promises to be very interesting. The apparent absurdity of the contention that because of isolation the liability to the spread of contagion is increased, is so obvious that it would seem to require some courage to deal with the facts as they are found in what are perhaps the most complete and accurate vital statistics available for study. But there are medical officers of experience in England who do not hesitate to hold and defend this view. One well-known physician of this class who has had sixteen years' experience as a public health official in a city of 50,000 inhabitants without an isolation hospital, and thirteen years in a city of 30,000 inhabitants with such an institution, gives it as the result of his experience that an isolation hospital has in no recorded instance reduced the attack rate or death rate of either scarlet fever or diphtheria. On the contrary, he insists, and seems to establish his contention by unanswerable statistics, that wherever isolation hospitals have been introduced the attack rate of scarlet fever has been doubled and that of diphtheria quadrupled. The Medical Officer for Warwickshire, reporting on the prevalence of scarlet fever in 1901, gave a table showing that in the half of his district which had isolation hospitals the attack rate was 4.2 per 1,000, while in the other half, which had none, the attack rate was only 2.6 per 1,000. The Medical Officer for Lowestoft in his annual report for 1900 says of scarlet fever in that district:

> A perusal of the appended statistical tables and of the figures furnished in the isolation hospitals report cannot fail to reveal that, although the preventive measures in connection with this malady for years involved an expenditure of time and money exceeding the presumed requirements of all other notifiable diseases, we have been systematically unsuccessful in our efforts to obtain any appreciable diminution in its prevalence. We are confronted with the cold statistical fact that it is steadily increasing in prevalence, almost pro rata with the increased precautions and provisions for its isolation.

The Medical Officer of Dover, reporting on the persistence of scarlet fever in that district, attributes it to the creation of centers of infection, free from supervision and capable of widespread mischief, after the return of convalescents to their homes. Finally, the health authorities of Leicester report that in 1902, in consequence of the outbreak of smallpox in the scarlet fever hospital, all of the patients, 144 in number were sent home at once. They were in all stages of the disease, but not a single case of secondary infection was reported or is believed to have occurred in the homes to which these 144 patients were returned. Comparing this with the Dover experience, it would appear that sick persons are less dangerous than convalescents. However this may be, there is no doubt from the showing of the Registrar General's statistics that the diminution in the scarlet fever death rate during the past forty years has been most marked in the towns without isolation hospitals, and that the diminution began to be noticeable before the isolation hospital period.

Such facts will give the health authorities of American cities something to think about. We are inclined to believe that if American experience were available for comparison, it would not vary materially from that of Great Britain.

**To New Orleans Conventions.**—The train of the New York State Medical Association, New York to New Orleans, is rapidly being filled and every indication points toward a large attendance from the East. The trip from New York will be made upon one of the Pullman's most luxurious vestibule trains, and the country through which it will travel represents the best section of the South. Among those booked for the train leaving New York, 4:25 P.M., May 2, via Washington, Atlanta and Montgomery, are: Dr. T. J. Acker, Croton-on-Hudson, N. Y.; Dr. William Allen, Jersey City; Dr. E .F. Brush, Mount Vernon, N. Y.; Dr. E. H. Carpenter, Oneida, N. Y.; Dr. and Mrs. Comstock, Dr. Percy Fridenberg, Dr. Jno. A. Fordyce, Dr. Geo. W. Guthrie and party, Wilkes Barre, Pa.; Dr. R. H. Gibbons, Scranton, Pa.; Dr. and Mrs. L. W. Hotchkiss, Dr. W. H. Knapp, Binghamton; Dr. and Mrs. J. G. Kerley, Dr. Johanna B. Leo, Mr. and Mrs. Elias Lester, Seneca Falls; Dr. Joseph Malone, Brooklyn, N. Y.; Dr. and Mrs. Henry O. Marcy, Boston, Mass.; Dr. Wilbur Marple, Dr. and Mrs. D. C. Moriata, Dr. and Mrs. Dodin, 1194 Wash. Ave., N. Y. City; Dr. and Mrs. C. S. Payne, Dr. Parker Syms, Dr. Geo. L. Stevens, Dr. W. R. Townsend, Dr. Chas. A. Wall, Dr. and Mrs. Robt. F. Weir, Dr. and Mrs. M. L. Rhein.

By the request of members of the New York State Medical Association and other members of the American Medical Association in the East, on Saturday, May 2, special service has been arranged to leave New York at 4:25 P.M., via Southern Railway, Washington, Atlanta and Montgomery. Trains composed exclusively of Pullman, dining, drawing, and state-room, sleeping, library, and observation cars. Those desiring Pullman reservation should send in their names as soon as possible to Dr. Frederick Holme Wiggin, President New York State Medical Association, 55 West Thirty-sixth street, New York; Dr. Wisner R. Townsend, 125 West Fifty-eighth street, New York, or to agents of the Southern Railway, 271 and 1185 Broadway; Pennsylvania Railroad office, 263 Fifth avenue. Time, New York to New Orleans, 39 hours.

**Obituary.**—Dr. Albert Wyckoff died at the American House, Belvidere, N. J., on Monday. in his fifty-third year. He had been an invalid for several months. He practised medicine for twelve years at Bristol, Penn.

Dr. William F. Smith, who for several years held the Chair of Anatomy at the College of Physicians and Surgeons of Baltimore, died Tuesday in that city of pneumonia after a short illness. Dr. Smith was prominent in medical circles. He was a professor at the College of Dental Surgery. He was a graduate of Johns Hopkins University.

Dr. Chauncey Ayres died Tuesday at his home in Stamford, Conn., from debility incident to old age. He was born in New Canaan, August 14, 1808, and was the oldest living graduate of the Yale Medical School, having been a member of the class of 1831. He was a resident of Stamford for sixty-six years.

## CORRESPONDENCE.

### TRANSACTIONS OF FOREIGN SOCIETIES.

#### French.

ACUTE LEUCEMIA OF HEMORRHAGIC FORM WITH NON-CONTRACTILE BLOOD-CLOT—ANEURISM OF THE ARCH OF THE AORTA ENCAPSULATED IN THE APEX OF THE LUNG—PRIMARY TUBERCULOSIS OF THE ENDOCARDIUM AND SPLEEN—ARTERIAL AND CAPILLARY NEVI IN DISEASES OF THE LIVER AND OF THE BILIARY PASSAGES—NORMAL BILIARY MICROBISM.

M. BEUSEAUD, at the Medical Society of the Hospitals, Feb. 13, 1902, stated that his associate, M. Hayem and himself had recently observed a woman, fifty years old, probably syphilitic, who was seized, without evident cause, with weakness and general lassitude. She did not present emaciation nor notable change in the color of the skin, nor fever, nor visceral lesions. Later on there appeared a few digestive troubles, namely, anorexia, sour waterbrash and diarrhea, together with a slight degree of tracheobronchitis. During the last 15 days of her life there appeared fever and multiple hemorrhages beneath the skin and mucous membranes and into the viscera. She died, after having passed bloody urine for a whole week. It was not possible to make out any increase in the size of the liver or the spleen, or of the lymphatic ganglia. The whole duration of the illness was about three months. Examination of the blood during life revealed a leucemia of the lymphatic type. At the end of 24 hours the blood-clot had not contracted at all, nor had it transuded a single drop of serum. This alteration was coexistent with a notable diminution in the number of hematoblasts. It is generally admitted that hemorrhagic leucemia results from obstruction of the small vessels by white blood cells. Along with lesions of this kind it is known that there are others analogous to purpura and, in a general way, there are hemorrhages caused by toxemia. Hayem has demonstrated that the toxemia of the hemorrhagic purpura resembles that determined by the injection into the blood of one animal of the blood or serum of another animal of different species. By these injections the blood is, in a degree, deprived of the hematoblasts, just as one observes in purpura hemorrhagica. Moreover, there is produced a coagulation by a granulous precipitate of these elements. Thus, in clinical cases, where there is absence of the contractibility of the clot, associated with a diminution more or less marked in the number of hematoblasts, it appears proper to ascribe this phenomenon to a toxemia possessing the peculiarity of precipitating the hematoblasts. To the list of diseases which are accompanied by this form of toxemia, which includes purpura hemorrhagica, progressive pernicious anemia and hemorrhagic smallpox, one should add acute leucemia of the hemorrhagic form.

M. CHAUFFARD presented before the same society an Aneurism of the Arch of the Aorta, procured from a man fifty years old, syphilitic and suffering from hemoptysis for eight days prior to his admission to the hospital. The onset of these hemoptyses occurred one evening during his meal, during an attack of cough, and they continued during the following days. Physical examination of this patient revealed an arterial sclerosis. In addition to a tuberculous deposit in the chest, visible palpitation and pulsation were present in the left suprascapular region, which gave a double pulse. The pulse in the radial and temporal arteries on both sides were synchronous. Consequently a diagnosis was made of an aneurism in the last part of the arch of the aorta. A few days after admission the patient was seized with a violent hemorrhage, which proved fatal. At the autopsy there were found in the left pleural cavity large clots, weighing altogether 3 kilograms. There was, moreover, in the inferior part of the thoracic aorta, an aneurism which had not been discovered during life and another aneurism of the aorta, situated just beyond the origin of the subclavian artery, which was quite encapsulated in the lung and adherent to it. Toward the infero-external aspect of this aneurismal pocket, a rent had been made into the bronchi by the rush of blood and from this point also in the pleural cavity.

M. FERRAND exhibited, in the name of his colleague, M. RATHERY and himself, a specimen from a patient who presented an enlarged spleen and hypertrophied liver, and also signs of a mitral lesion, prior to his death. He died in a condition of profound cachexia. The autopsy revealed that there existed a primary tuberculosis of the spleen and a vegetating endocarditis. Specimens from the endocardium showed, on microscopic examination, that the lesions were tuberculous. It appears to be a probable curiosity, for up to the present time no one has ever observed a tuberculous endocarditis unless there were present also tuberculosis of the lungs. In this woman, however, the lungs were absolutely sound. Sections taken from the spleen showed cheesy degeneration and necrosis and suggested that the spleen had been the point of infection of the patient and, thus, the cause of a secondary endocarditis of the same nature. Examination of the blood clot within the heart showed the presence of the tubercle bacilli in the blood. It appeared that the patient had had a true tuberculous septicemia.

The following subjects were discussed at the Society of Biology, at the sessions of Jan. 31, Feb. 7 and 14, 1903:

Gilbert and Herscher stated that it has already been demonstrated that during the diseases of the liver and biliary passages, various cutaneous angiomata exist, which, after examination, they have been able to class under two types—the arterial and the capillary angiomata. The arterial angiomata are situated chiefly on the face and hands, and are possessed of a central violaceous elevation, from which there radiate small vessels in a star-like arrangement. The capillary angiomata are found chiefly on the trunk, in the form of small red spots, surrounded by a white areola, which is scarcely visible. Only the arterial groups pulsate visibly and are capable of causing hemorrhage. Histologically, they are composed of conglomerate vessels of irregular lumen, with thinned-out walls and tumefied endothelium, somewhat globular in type, and encroaching upon the lumen of the vessels. In the intervascular cellular tissue around these tumors it is frequently possible to find deposits of pigment. The capillary angiomata are composed only of dilated capillaries. Both varieties have the same value semeiologically, because both are equally correlated with the active and latent seeds of diseases of the liver and biliary passages.

Gilbert and Lipmann have been carrying out bacteriological study of the normal bile, especially with reference to the effect of anaerobic cultures. They secured bile during the different stages of digestion from the biliary apparatus of various animals, notably of dogs, cats, rabbits, beeves and swine. The summary of the facts they established is as follows: In the normal state the biliary passages, at least outside the liver itself, are filled with an abundant variety of all forms of bacteria belonging to the anaerobic type. This microbism extends from the opening into the intestine, up to the division of the ducts within the liver and, therefore, is present in the bile-duct and bile-bladder and in the hepatic ducts in their initial portion. Ramifications of the bile-duct within the liver, however, are sterile. The true hosts of the normal biliary passage are chiefly the anaerobic germs, *Bacillus funduliformis* and the *Bacillus perfringens,* etc. Various aerobic bacilli are constant, notably the colon bacillus and the enterococcus, but do not, as a rule, extend beyond the common bile duct. It is, therefore, possible to regard the bile-duct as a kind of tree, the various parts of which are successive soils for these microbes. The mixed infection of the aerobic and anaerobic germs is present in the inferior half of the common bile duct. Pure anaerobic infection is found in the upper half of the biliary gall-bladder, and in the primary divisions within the liver and the bile-duct, and, finally, within the liver itself the bile-passages are sterile. These new facts open a field for consideration as to the part played by these germs in the pathogenesis of various diseases in this part of the body.

M. Labbe, at the Medical Society of the Hospitals, Jan. 30, 1903, presented, in his name and that of Armand-Delille, observations concerning a baby afflicted with hereditary syphilis. In this patient they found, at the same time, various cutaneous eruptions, fever, hyperleucocytosis, considerable hypertrophy of the liver and of the spleen. Examination of the blood showed that the red blood cells were 1,981,000, and those of the nucleated cells, 300 in a millimeter. Moreover, the hyperleucocytosis was of high degree and a special type, namely, consisting of 8 polynuclear, 32 lymphocytes, 50 mononuclear, 7 eosinophiles and 3 neutral field cells of the granular mononuclear type. Mercurial ointment rubbed into the skin, made the eruption of the skin disappear, reduced the enlargement of the spleen, and, after a time, corrected the symptoms of the blood. This observation seems to show that syphilis may possibly produce pseudoleucemia in the child.

## SOCIETY PROCEEDINGS.

### NEW YORK PATHOLOGICAL SOCIETY.

*Stated Meeting, March 11, 1903.*

**A Few Animal Parasites Sometimes Found in Man.**—Dr. Harlow Brooks read a paper on this subject and demonstrated specimens from cases of unciaria infection, and discussed the questions of the differences which might be observed between the European *Anchylostoma duodenale* and the American species of Uncinaria. One specimen was from a case of human infection in Porto Rico by the *Uncinaria americana,* the other was from a coyote which had died at the New York Zoological Park with bloody stools, emaciation, and anemia. The variety found in the coyote was probably the *Uncinaria stenocephala.* Another parasite spoken of by Dr. Brooks was the *Balantidium coli,* which he had found in the colon in cases of ulcerative dysentery in the orang. This parasite, according to the speaker, was without much doubt an occasional cause of dysentery in the human subject.

Another specimen was that of Miescher'schen Schläuche in the heart muscle of an elk.

Dr. J. C. Roper said that at the Hudson Street Hospital they had had recently two cases of infection with Anchylostoma. The patients were father and son. They had entered the hospital with marked anemia, 25 to 50 per cent., eosinophilia. On examination of the stools from the father anchylostoma were found. In the son's stools only eggs were found, until after the administration of an anthelmintic. There had been no diarrhea. During treatment they markedly improved. In both of these cases the eggs of the *Tricocephalus dispar* were also found, until after the administration of an anthelmintic. There had been no diarrhea. During treatment they markedly improved. In both of the cases the eggs of the *Tricocephalus dispar* were also found in the feces.

Dr. W. B. Noyes said that he had lately been asked to look at the feces of an Italian boy, aged sixteen years, at the Columbus Hospital. The boy had been in the hospital for some weeks. He was very anemic and had had occasional diarrhea, but had not at any time been very sick. At one time a provisional diagnosis had been made of tuberculous peritonitis. On examination the feces were found to be filled with the ova of some parasite which were apparently identical with anchylostoma. There were a few however which resembled the *tricocephalus.* A diagnosis of *Anchylostoma* had been made by one of the attending physicians on the strength of the anemia and the obscure intestinal lesions. The boy had been in this country for some time. Dr. Noyes said that the ova were identical in appearance with the pictures of the ova of *Anchylostoma,* and though the history was obscure, he presumed that this had been a true case of *Anchylostoma*, though the diarrhea had not been marked and the child had not recently been in a tropical country.

Dr. A. E. Thayer asked Dr. Brooks whether there were any distinct clinical symptoms by which the disease could be recognized.

Dr. Brooks said that the clinical symptoms in the animals were rather striking. There was marked anemia and disturbed circulation. The beasts lost weight rapidly and became very weak. In human infection the diagnosis was more difficult and probably could not be made out. The important point which he wished to raise was that meat which contained these parasites was not fit for use unless thoroughly cooked.

Mr. L. B. Goldhorn said that as regarded the question of recognition it might be of interest to draw attention to the fact that the ova of *Anchylostoma* were more easily recognized than those of any other intestinal parasite. It was only necessary to set the feces aside for one or two days, when the ova would be found to undergo segmentation.

Dr. Roper said that in one case he had watched development of the ova beyond segmentation. They had had specimens of the large worm and also of the ova. The patients in these cases had come from Brazil.

Dr. Brooks said that the ova sometimes developed in the female before their discharge. Segmentation in the oviducts was rather common. He had seen this in the parasites from animals and it had also been seen in human parasites.

**A Case of Filaria Bancrofti.**—Dr. F. Tilden Brown said that, associated with a mistake in clinical diagnosis, he had had the good fortune, on microscopical examination following operation, to find numerous embryos, in different developmental stages, of what he took to be *Filaria Bancrofti*. Although subsequent examinations of the patient's blood had failed to show the embryos, he thought this might in part be explained by the supposition that the orchidectomy had removed all the adult female worms, if in fact more than one had been originally present. In such a circumstance, it was a question of some interest how long the immature parasites, which had already been discharged into the circulation, might be expected to persist. The microscopic slides showing numerous embryos and ova were presented as well as micro-photographs of the same made by Dr. Sondern. The history of the case in which these worms had so unexpectedly been found substantiated what had just been said by Dr. Brooks, that with the extension of the interests of this country in tropical lands we must be prepared for manifestations of new diseases resembling perhaps quite closely other diseases with which we have long been familiar. The patient, a German, thirty-four years old, who as a naturalized citizen had been in the United States Marine Service and had been stationed at Porto Rico for the past two years, had had no fever or illness of any kind. During the past two months he had first noticed an enlargement and slight tenderness of the left testis. The possibility of its being a barrier to reenlistment had led him to enter Bellevue Hospital for treatment. On examination, Dr. Brown had found a moderate enlargement of the left testis. It had been difficult to determine whether a slight but tense effusion in the tunica vaginalis was responsible for the symmetrical increase in size or not. A small nodule, the size of a marble, slightly tender, was felt where the midbody of the epididymis is apposed to the testis, which of the two organs it involved could not be determined. The lower part of the spermatic cord was larger than its fellow. This vas was also thicker but not beaded. The patient had had no gonorrhea for ten years and never a swollen testis from this cause or from traumatism. A diagnosis was made of tuberculous epididymitis. The patient requested removal of the testis. At operation, nearly an ounce of straw-colored fluid occupied the tunica vaginalis. This sac, together with the testicle, lower third of the cord, and considerably more of the vas was removed. Palpation of the specimen now showed that the small nodule occupied, not the epididymis, but the rête testis just underlying it. On cutting into the lesion, a compact fibrous periphery was noted, and in its center yellowish-white semifluid material somewhat resembling tuberculous débris. The knife was drawn sideways over this surface. The small quantity of adherent material, Dr. Brown shortly after transferred to a couple of microscopic slides. On examining one of these, which he had stained for *Bacillus tuberculosis*, some worm-like forms were seen. The other slide had been treated with eosin glycerin and showed a number of field clusters of lumbricoids having the characteristics of *Filaria sanguinis hominis*. The larvæ were distinctly granular and surrounded by the loose-fitting hyaline membrane. The immature forms were of oval shape, and intermediate forms showed the embryo coiled and doubled in a larger oval sac, while those more advanced presented the elongated and undulating shapes seen when these parasites are found in the blood. Dr. Brown concluded that in cutting into the lesion he had opened a dilated lymph vessel or space, the abiding place of an adult female filaria; the knife had probably severed this worm, perhaps in several places, and on scraping it sideways the uterine canals had been compressed and more or less emptied of their contents, in this way accounting for the great number of embryos found in different developmental stages. The testicle and its attachments had unfortunately already gone to the pathological department before Dr. Brown had discovered its unexpected and unusual nature, and by the time word was sent to Mr. Goldhorn, asking to have careful search made for the adult worm or worms the specimen had been considerably cut and placed in formalin solution. Many of the clinical features of this case were not unlike that so well presented in the *American Journal of the Medical Sciences* for November, 1900, by Drs. Howard A. Lothrop and Joseph H. Pratt, of Boston. In their case they had had the good fortune to recover seven female and two male *Filaria Bancrofti* from the lymphatics of the epididymis.

Dr. F. C. Wood demonstrated some slides of quartan malaria stained by a simple modification of the chromatin stain, using for this purpose aqueous solutions of eosin and methylene azure.

Mr. L. B. Goldhorn said that he thought it very gratifying to see that rapid chromatin stains were taking the place of the triacid stain which was still much used, and which required such thorough and lengthy fixation. This standard dye failed to show a great many phenomena in red blood corpuscles that all these chromatin dyes showed.

**Demonstration of Blood Smears from a Case of Pseudo-leucemia Infantum.**—Mr. L. B. Goldhorn showed some slides from a case of a child with an enlarged spleen whose blood he had been asked to examine. The slides showed very interesting changes in the red blood corpuscles as well as peculiar conditions of the leucocytes present. The anemia, as a glance at the smears showed, was of a very high grade. There were peculiarly degenerated red blood corpuscles instead of ordinary granular ones. The granules seen in the protoplasm of these corpuscles were identical with those seen in the blasts. A peculiar thing was that while fifteen or twenty mitoses of blasts were rapidly found in one smear, in five or six others taken at the same time, none were found. Mr. Goldhorn had noticed this occurrence twice before; once in a case of pernicious anemia, and again in a case of Hodgkin's disease. Again, the first smears which had been taken a week before showed exquisite mitotic figures in very large red blood corpuscles; on taking blood again he had failed to find megaloblast mitoses in any of the smears. The leucocytes had been extremely interesting. There was a very marked eosinophilia though there had not been time for a differential count. A peculiar constituent of the blood were very large monocular leucocytes, the cytoplasm of many of which exhibited a strong affinity for the basic dyes. These cells were very abundant in this particular case. As regarded the leucocytes in detail, it seemed almost impossible to make a differential count because many forms seem to have left the bone marrow in an unfinished form, hence many leucocytes present could not be classified under the ordinary headings. Myelocytes were also present. From one point of view the blood resembled pernicious anemia, while from another point of view it resembled splenomyelogenous leucemia.

Dr. Eben Foskett, in giving the history of the case described by Mr. Goldhorn, said that the patient had first come under his care through his taking up the practice of another physician, Dr. Joseph E. Messenger. Dr. Messenger had first seen the child about January 1. It had then been ailing for several months, was very anemic, and had an enlarged spleen. The abdomen was much distended and the child was in a worse condition than when examined by Mr. Goldhorn. He had had it on tonic treatment, iron largely, quinine occasionally, with intestinal antiseptics. Dr. Foskett had first seen the case two weeks before. At that time the child was suffering from acute bronchitis. There was very marked distention of the abdomen; the liver was not enlarged. Calomel was given freely and the next day it was possible to outline the spleen. The spleen extended within one inch of the umbilicus and lower than the crest of the ilium. The child was twenty-eight months old. Its general appearance was pretty good, although it was still anemic. At the time of the report, the lungs had cleared up from the bronchitis and the temperature and pulse were normal. There were several small glands noticeable in each axilla and also in both groins. Dr. Foskett had after one or two examinations thought that the size of the spleen had slightly decreased, but since that time it certainly had not. The edge of the spleen was very sharply defined. The liver was not enlarged but the intestinal condition was very marked. Another point of interest was that the mother of this child had had eight or nine children two of whom had died at about this age with precisely similar symptoms and history.

Dr. F. C. Wood said, in connection with Dr. Goldhorn's remarks on the irregular appearance of large numbers of mitotic figures in the blood at varying intervals, that he had had an interesting case several years ago at St. Luke's Hospital, in a man suffering from pernicious anemia. The blood taken five days before death at a time when the patient was presumably moribund showed an enormous number of mitotic figures and megaloblasts. Often two or three mitoses could be found in a single field of an oil immersion lens. In order to obtain more specimens of this unique blood, the speaker had made a large series of slides on the day following, but on examining these slides very few megaloblasts were found and no red cells in a state of mitotic division. The patient recovered from the coma in which he had been on the previous day and improved considerably, so far as his general weakness went, but died suddenly four days later. The autopsy revealed a typical pernicious anemia with red marrow megaloblasts filling the shafts of the long bones. In this marrow were a very large number of large megaloblasts, many of them showing division figures. Such blood crises were not unknown in chlorosis, but did not seem to be frequent in pernicious anemia.

**Systemic Staphylococcus Infection.**—Dr. E. Libman read this paper, which appears elsewhere in this week's issue of the MEDICAL NEWS.

Dr. W. H. Park said he thought this report gave a feeling of confidence in the results of blood cultures when properly made since Dr. Libman had proven so many of his positive results by his findings of the same organisms after death, in the primary lesions.

Dr. P. H. Hiss asked Dr. Libman for a little more detail in regard to the scalp infection of which he had spoken, and if the abscesses were deep or superficial?

Dr. Libman said that some were deep and some superficial. They did not seem to correspond to the hair follicles. He was inclined to look upon them as being dependent upon the attempt of the skin to eliminate the bacteria. He had not introduced them so much to confirm his blood cultures, but rather as a matter of clinical interest.

Dr. Hiss said that personally he would be inclined to think that they were secondary infections due to the general systemic resistance having been lowered by the disease, and were probably not caused by the original infecting organism, but by organisms of the same species already present in the follicles.

Dr. Cyrus W. Field said that he had looked over the records at the Presbyterian Hospital of five hundred cases in which blood cultures were taken. There was one case which was very interesting. Eight tubes had been taken; four in bouillon and four in blood serum. Of these, two in blood serum and three in bouillon developed *Staphylococcus aureus.* The case had turned out to be a typical case of typhoid fever and typhoid bacilli had been isolated from the blood, showing that it was undoubtedly not a staphylococcus infection. The staphylococcus had been in the skin and had contaminated the needle, thus being introduced into the culture media. As the staphylococcus grows readily on blood serum and bouillon, Dr. Field thought he would doubt the presence of the organism unless it was found in all tubes. He thought there was a great deal of doubt as to the staphylococcus aureus being constantly found in the blood. He considered it a frequent contamination and that when it was present in cultures great care should be taken in interpreting the findings. The point raised referring to the urine had interested him very much.

Dr. Hiss said that Watson-Cheyne had been the first to call attention to this question of the excretion of *Staphylococcus aureus* through the intact kidney epithelium, and considered that the abscesses then arose from proliferation of the organisms in the tubules. The speaker had not placed very much confidence in the excretion of organisms through the intact epithelium because in the experiments to recover the organisms from the bladder contents, the chance of getting the organisms from the blood had seldom been eliminated. When due care had been taken in obtaining the urine specimen for analysis, it was his impression that organisms had seldom, if ever, been found in the urine, unless some pathological change had occurred which affected the integrity of the excreting organ.

Dr. James Ewing said that during the past year Bertelsman had reported in *Langenbeck's Archiv* a series of 100 bacteriological examinations of the blood. Out of this hundred, 41 gave positive results. Of the 41 there had been 15 cases in which the *Staphylococcus aureus* had been found. In looking over the details of this article he had noticed results which were quite contrary to those obtained by others, especially in the large proportion of positive cultures from patients who recovered. In comparing these observations with the work of others he had decided that they required confirmation, especially in cases where the streptococcus was found in osteomyelitis, panaritium, urethral fever, and in puerperal sepsis, and yet the patients recovered. It had seemed to him that these results were contrary to those generally obtained. Dr. Libman's report seemed to give in some degree the confirmation required. He felt no doubt that Dr. Libman's cases of *Staphylococcus aureus* infection were genuine. The large number of cases encountered could be explained by the fact that he obtained his material from a very active surgical service. The scepticism manifested at the last meeting of the Society in regard to the frequency of *Staphylococcus aureus* in cases of endocarditis he had shared. He had noticed in the report just made that out of a series of 23 cases only two were found in malignant endocarditis, and he thought that Dr. Libman must have had a much larger number than two of malignant endocarditis out of 300 examinations. This did not seem to him to indicate that the *Staphylococcus aureus* had been found in a large number of cases of malignant endocarditis.

Dr. F. Tilden Brown asked what Dr. Libman's practice had been in the taking of blood. Was it to collect as much as 10 or 12 c.c. or to take lesser quantities for the initial test?

Dr. Field said that out of the 500 cases of which he had spoken only 12 had shown *Staphylococcus aureus* and but three of these were cases of malignant endocarditis.

Dr. Libman said, in regard to Dr. Hiss' remarks about the scalp lesions, that he himself had never seen the particular type under discussion in any other disease and would be glad to hear whether anyone present had seen the lesions to which he wished to draw attention in cases of osteomyelitis or any other diseases. He thought that the lesions occurred particularly in the scalp in children because of the activity of the sweat glands in that part. He said that there were four channels through which bacteria were supposed to be eliminated from the body, these being the skin, urine, bile and milk. As regarded the milk, the question was still an open one. The excretion through the bile could hardly be studied in the human being. He had introduced the details concerning the skin lesions and the urine to draw attention to two channels of excretion. He said that there was much discussion going on as to whether bacteria could be eliminated from the kidneys if the renal epithelium and vessels were normal; but clinically this point was of no importance, because by the time patients came under observation they were all apt to have decided degenerative changes in the organs.

In reply to Dr. Field's remarks, Dr. Libman said that he had been willing to report positive findings even if all the plates and cultures did not show organisms. The cases cited, he believed, proved that he was correct in this view. Furthermore, he said, he used several kinds of media in each blood culture and if he obtained organisms in only one flask or one plate it might be that it had only occurred there because he had used a particularly favorable medium in that flask or plate, and that those who used simply one of the ordinary media might easily miss the organism.

Dr. Libman said that he could hardly agree with all the reports of Bertelsman, as he was skeptical concerning Bertelsman's reports of the *Staphylococcus albus* in the blood. Of course, it was possible that he had not sufficiently tested the organisms. He was under the impression that Bertelsman used the insufficient method for disinfecting the skin, which Schottmüller used.

As regarded Dr. Brown's question, Dr. Libman said that the amount of blood used varied from 2 c.c. up to 25 c.c.; as a rule it was 5 to 15 c.c. In several cases of plain streptococcus septicemia he had found the organism in a few drops of blood.

In conclusion he wished to draw attention to the fact that in blood culture work one must depend almost entirely upon one's own experience, as there were so many conflicting reports in the literature.

Dr. James P. Atkinson read a paper on The Period of Development, the Time of Greatest Accumulation, and the Persistence of Diphtheria Antitoxin in the Blood of a Series of One Hundred Horses. The paper appeared in the *Journal of Medical Research*, March, 1903, p. 173.

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## BOOK REVIEWS.

Materia Medica, Therapeutics, Medical Pharmacy, Prescription Writing, and Medical Latin. A Manual for Students and Practitioners. By William Schleif, Ph.G., M.D. Instructor in Pharmacy in the University of Philadelphia. Second Edition, Revised and Enlarged. Lea Brothers & Co., Philadelphia and New York.

This is an excellent small manual for a student of pharmacy or of medicine who would desire to review the subject of materia medica for examination purposes. It tells in few words the main facts concerning the more important drugs, and has these systematically and easily arranged.

Manual of Bacteriology. By Robert Muir, M.A., M.D., F.R.C.P., and James Ritchie, M.A., M.D., B.S.C. American edition by Norman MacLeod Harris, M.B. The Macmillan Co., New York.

The present edition of Muir and Ritchie's Bacteriology comes to us in a very much improved form. It is a practical manual, being one of the best of the small works. While it contains little that is new, yet it presents that which is known with much judgment.

This work retains the chapter on fungi, which has been elided from the English edition, and also does full justice to the work of American scholars. The chapters on bibliography particularly presenting the work of the American laboratory.

A Course in Botany and Pharmacognosy. By Henry Kramer, Ph.B., Ph.D., Professor in the Philadelphia College of Pharmacy. G. E. Stechert, New York.

The author has compressed into one volume all the usual work in pure and applied botany studied by students of pharmacy in this country.

In the first fifty pages he treats of the elements of plant histology; in the next fifty pages the general principles of the external morphology of the different plant organs are graphically and tersely considered.

Part II deals with the subject-matter of Pharmacognosy, the first chapter containing descriptions of the crude drugs most commonly in use; the second chapter dealing with powdered drugs. In this chapter the author's well-known classification by color is reproduced.

Part III consists of a series of directions on how to stain and otherwise treat vegetable tissues in order to bring out certain particular features. Finally, Part IV consists of 17 plates with 128 figures of the author's own drawings.

From the standpoint of the practical pharmacognosist, the book is a very excellent one, and, we believe, reflects great credit upon the author.

THE AMERICAN TEXT-BOOK OF OBSTETRICS, FOR PRACTITIONERS AND STUDENTS. By JAMES C. CAMMERON, M.D., E. P. DAVIS, M.D., R. L. DICKINSON, M.D., H. J. GARRIGUES, M.D., B. C. HIRST, M.D., CHAS. JEWETT, M.D., H. A. KELLEY, M.D., R. C. NORRIS, M.D., C. D. PALMER, M.D., GEO. A. PEARSALL, M.D., EDWARD REYNOLDS, M.D., HENRY SCHWARTZ, M.D., J. C. WEBSTER, M.D. Edited by RICHARD C. NORRIS, M.D., with ROBERT L. DICKINSON, M.D., as art editor. Second edition, revised. W. B. Saunders & Co., New York, Philadelphia and London.

THE first edition of the American Text-Book of Obstetrics marked an era in the manufacture of textbooks in this country. It appeared at a time when there was a dearth of really excellent treatises and was of such a high-grade that it took first rank on its publication.

It is a pleasure to welcome the second edition and to note that from all points of view, illustrative as well as literary, it still occupies its preeminent position. We believe that there is no book its equal, and if anything that the reviewer can say will help to spread its merits abroad, we would most heartily say it; for there is no question but that the art and science of obstetrics is one of the most important of all the branches of medicine for the general practitioner, and there is greater need for an authoritative and carefully written work on obstetrics than in almost any other branch of the healing art.

This work in question fulfils, we believe, every indication. It is thoroughly scientific, accurate, well-written, and in its illustrative features beyond compare. We trust that the publishers will soon issue a third edition as an evidence of the appreciation on the part of the profession for such an excellent work.

A MANUAL OF MATERIA MEDICA AND PHARMACOLOGY. By DAVID M. R. CULBRETH, Ph.G., M.D., Professor of Botany, Materia Medica and Pharmacognosy in the Maryland College of Pharmacy; Professor of Materia Medica in Pharmacognosy in the University of Maryland Medical and Dental Schools. Third edition. Lea Brothers & Co., Philadelphia and New York.

DR. CULBRETH'S MATERIA MEDICA has now stood the practical test of use for a number of years, and in its present third edition we note a number of changes and improvements that brings it abreast of the newer work being done in the line of its subject-matter. For students of pharmacy and for beginners in medicine who would gain an accurate, and at the same time a condensed knowledge of their materia medica, we believe this volume to be one of the best published. For advanced students of medicine, however, its value is secondary. For them it should be a foundation not a finality.

We are at a loss to see why the chapters on the microscope in materia medica are included in a work of this kind, unless it is for the purpose of competing with books that have similar short summaries. This criticism holding more particularly for its use in medical schools rather than in schools of pharmacy; but even for these latter the chapter is too short and evanescent to be of real service. Apart from this, however, the book is entitled to most hearty commendation, and the author to high praise for its uniform accuracy and well-judged compression.

THE NURSING PROFESSION, HOW AND WHERE TO TRAIN. Edited by Sir HENRY BURDETT, J.C.B. Fourth year. The Scientific Press, limited, London.

THIS is a very convenient reference book bearing on the different training schools for nurses throughout the world. For nurses, however, in the United States, it is very fragmentary and incomplete, and when it is borne in mind that the universal criticism of students of systems of nursing the world over is united in proclaiming the American schools as second to none, if not the best in the world, this omission is all the more striking.

HUMAN ANATOMY. A complete systematic treatise by various authors. Edited by HENRY MORRIS, M.A., M.D., London, F.R.C.S., England. Third edition. P. Blakiston's Son & Co., Philadelphia.

WE have already stated in the MEDICAL NEWS that Morris' Anatomy is, in our opinion, the best work in the English language on this important branch of medicine, and we see no reason to change our minds in looking over the third edition. In fact, the thorough rewriting, and reediting has brought this text-book more in accord with the best modern anatomical science. In one particular regard the book stands far ahead of its fellows dealing with the same subject-matter, and this is in the thorough treatment of the nervous system.

With the exception of the chapters on the circulatory system and the eye, the book is a new one and it well merits the high praise once given it by a leading teacher of anatomy in New York city, who called it the "bible" of modern anatomy.

The publishers have done their part in making the work attractive, and we trust that the present edition will win the success obtained by previous editions.

## BOOKS RECEIVED.

*The* MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

ANNUAL REPORT OF THE NEW YORK STATE REFORMATORY AT ELMIRA. 1902. 8vo. Elmira.

CHIRURGIE DER NOTFÄLLE. By Dr. H. Kaposi. 8vo, 235 pages. J. F. Bergmann. Wiesbaden.

DIE CHLOROFORM UND AETHERNARKOSE IN DER PRAXIS. By Dr. Koblanck. 8vo, 42 pages. J. F. Bergmann. Wiesbaden.

DIE REIZUNGEN DES NERVUS SYMPATHICUS. By Dr. W. Plonies. 8vo, 54 pages. J. F. Bergmann. Wiesbaden.

DIE TECHNIK DER LITHOTRIPSIE. By Dr. Felix Guyon. Translated by Dr. G. Berg. 8vo, 86 pages. Illustrated. J. F. Bergmann. Wiesbaden.

THE MYCOLOGY OF THE MOUTH. By Dr. K. W. Goadby. 8vo, 240 pages. Illustrated. Longmans, Green & Co. New York and London.

PRACTICAL PHYSIOLOGY. By Drs. Beddard, Hill, Edkins, MacLeod and Pembrey. 8vo, 495 pages. Illustrated. Edward Arnold. London.

PHYSICAL CHEMISTRY FOR PHYSICIANS AND BIOLOGISTS. By Dr. E. Cohen. Translated by Dr. M. H. Fischer. 12mo, 343 pages. Illustrated. Henry Holt & Co. New York.

# THE MEDICAL NEWS.

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## ORIGINAL ARTICLES.

### THE TREATMENT OF SYPHILIS.*

BY W. D. TRENWITH, M.D.,
OF NEW YORK;
GENITO-URINARY DEPARTMENT, VANDERBILT CLINIC, COLLEGE OF PHYSICIANS AND SURGEONS, COLUMBIA UNIVERSITY.

WHEN one considers how often in the practice of medicine the question "Have you ever had syphilis?" is asked and how often patients are found suffering from the disease, it is borne in upon us how important it is that this class of patients be so treated that the disease may be eradicated, and the patient and his descendants spared the troubles to which, if neglected, it gives rise.

For convenience and the purposes of easier description we may divide the treatment of syphilis into four stages, which stages are somewhat arbitrary and governed largely by the stage of the disease and not so much by the element of time, for the longer one has to do with treatment in these cases, the more does he see that treating syphilitic subjects by rote, is wholly out of the question, and that every case demands close attention and many variations of what may be called fundamental principles of treatment, viz., the prompt and efficient administration of Hg during that time when the round cells, caused by the syphilitic virus, are still young and more easily acted upon, and the administration of K. I. to eliminate the degenerated round cells and the toxins of syphilis.

So many different elements enter into a patient's response to medication, whether or not he is a blonde or brunette, robust and hearty or anemic and neurasthenic, calm or nervous, ability to get poor or good food, hereditary weaknesses, environments favorable to the carrying out of the best method of treatment for him, also his work and mental activity.

To revert then to the four periods, they may be divided as follows: (1) The secondary incubation or pre-eruptive period; (2) the eruptive stage including the first six or seven months; (3) from the sixth or seventh month to the end of the second or third year; the late secondary stage; (4) the tertiary stage.

The pre-eruptive stage, which usually is a period of about forty days, though it may extend over a much longer period, in an exceptional case ninety days elapsed, is a period of considerable importance, for it is during this time that we are gaining all the information we can of the patient's environments, physical and mental conditions and his habits of life. The attention is given to building up the patient's condition; seeing that such habits as smoking, chewing and the drinking of alcoholics are stopped; that he rests well at night; that his food is sufficiently nourishing; that he gets plenty of fresh air; and is not subjected to mental worry.

It may seem unnecessary to enumerate all these apparently simple things, and yet I do assure you that these things are of great importance, even though simple, and that they are of very material advantage to the patient.

If the chancre has not yet healed it is necessary to keep it scrupulously clean, washing it twice a day, with warm water and some bland soap such as Castile soap, and then with a solution of bichloride of mercury, 1-2,000, applying afterward a small piece of lint or cotton to the surface of the lesion saturated with either bichloride solution, 1-2,000, or Lot. Nigra diluted one-half, my preference being for the latter. In certain cases where there has been engrafted on the sore a growth of pus-producing cocci, nothing, in my opinion, is better to apply after the washing than powdered iodoform, dusted lightly over the surface and then covered with a piece of lint saturated with bichloride solution, 1-2,000. Iodoform may be, and is, objected to on account of its odor, but inasmuch as it accomplishes the most good in the least amount of time it seems a few days of it ought to be tolerated. It should be discontinued just so soon as the sore has a healthy appearance, for it can then do no good to longer apply it. The treatment as outlined above is then carried out. Aristol and especially antinosine are also useful preparations and may be used with benefit in many cases. They are not subject to objection because of their odor, but they cannot always be depended upon to accomplish the prompt results of iodoform.

When the chancre heals, but there remains an indurated nodule, it is then time to begin the application of 50 per cent. mercurial ointment to its surface twice in twenty-four hours. Usually a prompt response to treatment is noted, the induration quickly disappearing under its use. The inguinal glands are not, usually, made out to be enlarged before the seventh to the tenth day, but as soon as they can be made out, applications of 50 per cent. mercurial ointment should be made to them. This early regional application of mercury ointment does not in any way interfere with the orderly sequence of syphilitic events—about gr. xv of the ointment should be used, and thoroughly rubbed into the groins every night or every other night.

Some medical men have advocated the cutting out of the chancre with the idea of aborting the disease. To accomplish anything at all, the sore would have to be cut out at almost its inception, which is, of course, impossible, as the lesion at this time is of only microscopic size. When a lesion becomes visible and is cut out very early, as it should be to be of any value whatever, it is impossible to make a diagnosis accurately in the vast majority of cases. Here then we see a chance for an enthusiast to claim a large number of cures without proper foundation in fact and the claim for the abortion of syphilis set up.

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* Read before the Riverside Practitioner's Society, Dec. 9, 1902.

In a case of Dr. Taylor's, and to Dr. Taylor great credit should be given for setting the matter rightly before us, the patient appeared before him and it was advised to have a circumcision done, the foreskin being free from any visible lesion whatsoever. When, however, four days later he came to be operated upon, a very minute lesion had made its appearance upon the foreskin, it being just barely visible. Upon questioning more closely the patient admitted suspicious coitus some two or three weeks before. The circumcision was performed and the lesion was submitted to microscopic examination for diagnosis. A round-celled infiltration, characteristic of syphilis, involving all the blood-vessels of the specimen, as well as the site of the lesion, was found, and the diagnosis of syphilis was later confirmed by the appearance of a typical roseola. Moreover certain Russian experimenters (in Russia syphilis is extremely common and the opportunities for research and observation very good) have, by dissections, discovered that by the time the lesion makes itself manifest, the lymphatic glands of the penis and groins have already become involved. Therefore, while excision of a lesion may be desirable for some reasons, it certainly should never be done with the idea of aborting the systemic infection.

During this period a tonic, of which iron in some form is an ingredient, is advisable. I do not here offer you any formula, as you all undoubtedly have your pet way of administering iron. Later on when the secondaries have appeared and the patient is more profoundly under the influence of the disease, very frequently the call upon his blood for iron is so great that an anemic condition, very prejudicial to the progress of his case, may develop, and it is well to take "time by the forelock" and prevent this, if possible, by our early treatment. A patient will appreciate this, for he does not then feel as if nothing were being done and his case neglected. Good, plain, simple food, properly cooked, ought to be insisted upon, as well as that his night's rest should be good, and that he goes to bed early and gets from eight to nine hours' sleep every night. At this time he should be ordered to stop all alcoholic beverages, an exception being made in those cases, who have always been in the habit of taking a glass of wine at dinner, or an occasional glass of ale or beer, and who would be more comfortable with than without it. Trying to treat syphilitics who drink, in the common acceptation of the word, is like trying to fight fire without water. Tobacco it does not seem necessary to stop absolutely at this time. He may smoke in very great moderation until the secondaries make their appearance, when it must be stopped for good, during the first six or seven months at any rate.

I consider this a very important point, for undoubtedly it is to the use of tobacco and the resulting hyperemia and congestion of the mucous membranes of the lips, mouth, tongue, tonsils, pharynx and palate that so many of the mucous patches and plaques are due, and it is of untold advantage to a patient to get through his trouble without these lesions, to say nothing of the very much greater source of danger he becomes, when thus afflicted, to infect others.

Imperfect teeth also play an important rôle in the causation of lesions, especially of the tongue. They should be put, therefore, in as perfect repair as possible, all cavities filled, or if they cannot be filled, the tooth pulled. There ought not to be any sharp edges to imperfect teeth, for almost invariably they will give rise to some stubborn lesion which may resist all our efforts to cure. The blood of a person recently syphilitic being infectious and the secretion from mucous patches of the mouth being especially virulent, the patient should be instructed to tell his dentist that he is syphilitic, so that the dentist will sterilize his instruments after use and use precautions to protect himself from infection. At this time, too, I am in the habit of prescribing a tooth-powder, to be used twice a day, morning and evening, made up as follows:

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|---|---|---|
| ℞ | Potass. Chlorate.................. | ℥ss |
| | Powdered Soap.................... | ℥jss |
| | Ol. Gaulth........................ | q.s. ♏ |

Such a powder may at times be distasteful, and I then prescribe

| | | |
|---|---|---|
| ℞ | Potass. Chlorate.................. | ʒj |
| | Water ........................... | ℥viij |

to be used frequently through the day as a mouth wash. These measures together with the frequent use of the tooth-brush will serve to keep the mouth clean and sweet, and help a long way toward the prevention of lesions in the mouth, and will also prevent, to a very large degree, the salivation one is so apt to see when the mouth and teeth are foul and unclean.

Thus we approach the time when we may expect the appearance of the secondaries and the confirmation of the diagnosis, both to our own and the patient's certain knowledge. They usually, as you know, make their appearance in about forty days, in some rarer cases coming at the end of thirty-five days, or perhaps not until fifty, sixty, seventy, eighty or even ninety days have elapsed.

Just as soon as the eruption can be demonstrated it is my custom to have a plain serious talk with the patient. I call his attention to the tripod upon which Taylor says the diagnosis of syphilis depends, namely: "the sore, the enlarged lymphatic glands and the eruption," and then I explain the serious nature of his disease to him and impress upon him how largely upon himself depends his cure, for without proper cooperation on his part, we may hope to accomplish but little toward the ultimate cure. I tell him that the disease, through his blood, has invaded every part of his system and that he cannot hope to be pronounced cured before two or three years have elapsed, and that if he follows out directions carefully, he stands from 85 to 90 per cent. of a chance to be ultimately cured, and especially do I warn him that because under treatment all signs and symptoms rapidly disappear, it does not mean that the disease has been eradicated.

In my public and private practice I see a good many cases, who have had syphilis and who have been treated for it for from three months to a year perhaps and who have then drifted away from their physicians, largely, apparently, because they have not been told, as I often find upon questioning, of the gravity of their trouble and have naturally concluded themselves cured when signs and symptoms appreciable to them had disappeared.

It would seem, therefore, to be as much a part of the treatment as the actual treatment with medicines, to have this talk with them. Indeed I should call it a duty, for certainly we all know of how little avail is the treatment with medicines, partially carried out to prevent the later and, in many cases, incurable lesions which may occur. The patient is warned also as to his liability to infect others and is cautioned against drinking from public cups or allowing others to use articles, which he has had in his mouth, and against kissing, or having coitus, etc.

The eruption having made its appearance we must then begin to treat actively, and we must give some thought as to the conduct of the case, and in what way the patient shall receive his medication, for mercury can be, and is, given in a great variety of ways. In our endeavor to heal we are ever seeking a short cut, so to speak, but it is well to remember that in syphilis there is no such thing as a rapid transit cure.

It is not my purpose this evening to enter into a discussion of the merits of the various plans of treatment, suffice it to say that it would seem unwise to condemn absolutely all methods but one. Undoubtedly some have merit and may be used with advantage under certain conditions and in certain cases. I have had some opportunity of using different plans of treatment and of seeing the results both in my own cases and in cases of other practitioners, and it is as a result of this that I favor the method presented as being the best and giving the least return of late lesions.

The importance of time during the first six or seven months I cannot too strongly emphasize. It is upon the new young cells that mercury is most destructive, and so every day lost in treatment at this time is just so much of a loss to the patient's chance for recovery. The vacation periods at this time should be extremely limited and should occur only when the condition of the patient demands it.

Sometimes I begin with protoiodide of mercury in doses of from gr. 1/8 to gr. 1/4 t.i.d. p.c. The amount given is variable, being from gr. 1/8 to gr. 1/2 t.i.d. p.c., according to the susceptibility of the patient. I do not continue it, however, beyond the first two or possibly three weeks, unless there is some very good reason for doing so. I much prefer, and usually do begin at once, inunctions. The body, as no doubt you all know, is divided into eleven parts by Dr. Taylor in his "Genito-urinary and Venereal Diseases," as follows:

(1) The neck and head; (2 and 3) the arms, palms and axillæ; (4 and 5) the legs and soles; (6 and 7) thighs, with groins and scarpa's triangles; (8 and 9) the breast and abdomen; (10 and 11) the back, from the root of the neck to the lower part of the gluteal region.

It is of importance, in my opinion, to see to it that every portion of the body is covered with mercury, to this end directing that the spaces between the fingers and toes, as well as the palms and soles, shall be rubbed. I have seen some cases where this was not done return with syphilis developed upon parts thus neglected.

I use usually the official 50 per cent. mercury ointment, as being the most reliable and giving the best results, prescribed in oil papers, each to contain 30 or 40 grains. If it is desired to give larger doses it is easy to order the patient to use a paper and a half or two papers, etc. We are thus able to give exact doses.

The patient is then directed to take a warm bath at night or at least to wash with warm water the region to be rubbed, afterward using a little alcohol to sponge off the part, a small amount of carbolic acid added to the water used is sometimes very beneficial to those patients whose skin is tender and easily inflamed by the use of the ointment.

The patient is then told to take one of the papers of ointment and rub the ointment thoroughly into the part intended. I prefer a circular motion of the hand with the fingers held somewhat apart. From 15 to 30 minutes will be required to get the ointment so thoroughly rubbed in that the skin will feel rather dry again and not especially oily or greasy. A balbriggan undershirt or pair of drawers may now be put on and worn to prevent contamination of the bed or night linen, and ordinary underwear during the day. Each part of the body should be rubbed in rotation until the whole body has been covered, rubbing every night or every other night, watching closely for salivation, anemia or loss of weight, which conditions indicate that mercury is being given in too large amount and calling for a few days cessation of the treatment, when the course may be resumed but with usually smaller doses.

It is not safe to allow these patients to be longer away than four or five days. The bowels should be kept open, there being a tendency to constipation in many of these cases, the mouth scrupulously clean and above all no smoking should be allowed during this period. If the patient does well and has not suffered in any way from the measures employed, the amount of ointment may be raised to 45 grains and the body rubbed as before. This to be again repeated with

60 grains if the patient can stand it or with a smaller amount, if not.

The inunctions are now stopped and after a day or so the sat. solution of potassium iodidi is given, beginning with 10 drops, greatly diluted with water or milk, and running rapidly up to 20 or 25 drops t.i.d. p.c. I would ask you to note the early use of potass. iodidi. Except in those cases of syphilis early manifesting extreme nervous or cerebral symptoms, when potass. iodidi is indicated, K. I. has not usually been used much before the sixth month, but it is of decided benefit in removing broken down syphilitic cells and toxins at this time. Should the iodide cause any gastric disturbance, Fairchild's Essence of Pepsin or the Elixir of Lactopeptin added to the water or milk, in from ʒj to ʒij doses will usually be sufficient to prevent it, this to be used for a period of possibly 15 or 16 days, when inunctions are again begun and repeated once, then the K. I. is again begun as before and used for about the same period, when another course of inunctions is given and once repeated as above followed by K. I., this course, when all is well, to be repeated until the sixth or seventh month as the case may demand, during which time the patient will have covered the entire body from seven to twelve times. A rest of three or four weeks may now be given and then the patient is put upon mixed treatment of

℞ Hydrarg. Biniodidi.......... gr. $^1/_{32}$ to gr. $^1/_{24}$
Potass. Iodidi............... gr. v to gr. xv
Aq. destil.................q.s. ʒj
M. Sig.: ʒj t.i.d. p. c.

in plenty of water. To this tr. cinch. co. may usually be added with advantage. The patient takes this with occasional intermission of two to four weeks until the first 12 or 13 months have passed. After this K. I. is given in greater amount up to 50 or 60 grains t.i.d. p.c. about two months out of every four and occasionally using the mixed treatment. The lymph glands should be constantly rubbed until they are no longer to be made out easily.

This will carry us up to the second year, when if all is well, treatment may be stopped entirely and the patient kept under observation for another year. Often it is necessary to carry the treatment up to two and a half or even three years, when he may be pronounced cured if no lesions manifest themselves and the lymphatic glands have assumed their normal size. I have detailed here a typical case, but unfortunately there are also many cases which do not run the smooth course I have outlined. We have all sorts of conditions to deal with, and modifications must be made in the plan of treatment to suit the necessity of the case.

The headaches of syphilis usually disappear promptly as soon as active treatment is begun. In some cases, however, they persist and it is then necessary to resort at once to the use of K. I. in sufficient amount to control them, or to a combination of mercury and K. I.

Alopecia occurs in a certain percentage of cases and is usually markedly benefited by the application at night of ammoniated mercury 10 to 25 per cent. in vaseline and washed out in the morning with bichloride 1-3,000.

Mucous patches in the mouth, on tongue, lips, palate, tonsils, or pharynx are best controlled by strict cleanliness of the mouth and the application of a 5-per-cent. solution of silver nitrate every other day and the use of a gargle containing mercury such as

℞ Hydrarg. Bichlorid..................gr. iij
Tinct. Myrrh........................ ʒ ss
Aq. destil.......................q.s. ℥ viij
M. Sig.: Gargle.

or

℞ Alum ............................ ʒ j
Chlor. Potass...................... ʒ iss
Aq. destil......................... ℥ viij
M. Sig.: Gargle.

Condylomata are, in most cases, promptly cured by cleansing and the dusting on of calomel and bismuth subnit. aa, and the wearing of cloths to prevent the chafing of adjacent parts. Syphilides of the palms are benefited by rubbing in of mercury ointment and keeping them dry. All these measures, of course, in addition to the general treatment.

Should salivation occur during the inunctions, stop them at once, move the bowels freely with Epsom or Rochelle salts for a few days. Use in the mouth some wash containing alum and potass. chlorate, borolyptol or something similar. In cases of secondary syphilis developing relapsing syphilides or gummata, mercury ointment is applied to the syphilide or gummata and pretty large doses of K. I. are given internally and sometimes, especially in cases of neglected syphilis, general inunctions are of very great benefit. Some stubborn lesions will yield readily to fumigations of calomel in the presence of water vapor, or to the use hypodermically of bichloride of mercury in solution. Some too will yield to

℞ Hydrarg. Bichlorid..................gr. j
Collodion ......................... ℥ j
M. Sig.

Paint over part and renew from time to time. Plaques and gummata of the tongue, as well as some of the later tertiary lesions of the body, are very much benefited by the use of hypodermic injections of bichloride of mercury. In my hands this method has yielded some very brilliant results and I know of nothing equal to it in these cases. A needle from 1¼ to 1½ inches long is best and it should be thrust directly into the deep muscular tissues of the gluteal regions, after first sterilizing the skin at the point of puncture. The bichloride is best made up in two solutions of which ♏X=gr. ⅛ in one and in the other ♏X=gr. ¼. With these solutions it is possible to vary the amount given, as may be required. I usually begin with gr. ⅛ giving it every second or third day and gradually working up until gr. ⅜ to gr. ½ is being given. Great care must be used, for it is easy to salivate. In a number of cases in which I have used this method the simultaneous use of K. I. has proved of considerable value. The injections are rather apt to be painful lasting for two or three days.

Spraying the skin at the point of puncture with ethyl chloride seems to diminish the pain, both at the time of puncture and subsequently.

It is also a method of great value when it is required for some reason, as in malignant syphilis, to get the patient very quickly under the influence of mercury. As a routine method of treating syphilis, it is not to be advised.

In tertiary syphilis it is best to use K. I. with a free hand, running up to an ℥j or even much more a day, if necessary, and the application of mercurial ointment to any broken down places.

The biniodidi of Hg is often combined with advantage with the K. I. We cannot hope to cure these patients, but we can make them comfortable and keep them in fair condition, and usually free from tertiary lesions by proper treatment. These persons must be taking Hg and K. I. pretty much all the time.

Fumigation is of considerable value in some cases of stubborn syphilides not yielding to other methods of treatment. It is best given in an institution devoted to the treatment of syphilis and in accordance with the physician's orders. Calomel and cinnabar are usually used in varying amounts usually in the neighborhood of

| | | |
|---|---|---|
| ℞ | Calomel | gr. xx |
| | Cinnabar | gr. xl |

Its effects must be watched for it may easily salivate.

Fumigation and the hypodermic use of bichloride are both very valuable and should always be thought of and used when other means fail us.

140 West Ninety-fourth Street.

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## THE TREATMENT OF ACUTE GOUT.

BY J. R. CLEMENS, M.D., M.R.C.S. (ENG.),
OF ST. LOUIS.

Although a certain great diagnostician used to make light of the difficulties of the treatment of diseases, maintaining that the science of medicine was synonymous with the science of diagnosis as treatment that was effective, presupposed a diagnosis that was correct, I venture to affirm that all therapeutic measures are not as simple in application or follow as spontaneously from a previously made and correct diagnosis as he would have us believe.

Before entering into detail of treatment of acute gout, a few remarks concerning the diagnosis of acute gout may perhaps not be out of place.

In a diagnosis of acute gout we must take into consideration: (1) The sex of the patient; (2) The age of the patient; (3) heredity; (4) physical signs of the gouty diathesis.

Dwelling for a moment on each of these we will find that as regards (1), Sex. Acute gout is much commoner in men than in women, probably due to the fact that waste and effete matter in women finds an outlet in the menses. After the menopause gout becomes more common in women. (2) Age. Acute gout is rarely seen before the third decade of life while rheumatism is a disease of childhood and adolescence. (3) Heredity. A gouty family history is an important point to ascertain. (4) Physical Signs. Tophi are as characteristic of gout as are chancres of syphilis.

In the treatment of a case of acute gout we must consider general (medicinal and dietetic) and local treatment, and, what is often neglected, the individual. The general indication for treatment is elimination and this we effect by mercurials, salines, diuretics. Prevention of reaccumulation and the exhibition of specifics complete the treatment.

On taking charge of a case of acute gout, unless there be indications to the contrary as an exhausting flux or great debility, treatment should be begun by a blue pill (pil. hydrargyri gr. iv) or calomel (gr. iij), followed several hours later by black draught (mist. sennæ co. ʒij), the idea being not so much free purgation as relief of hepatic congestion. When the cathartic has acted well, the following mixture should be taken every three hours (in doses of two tablespoonfuls) until the motions become very free when the time between doses may be increased:

| | | |
|---|---|---|
| ℞ | Magnesii Sulphatis | ʒiss |
| | Magnesii Carbonatis | gr. xxx |
| | Potassii Citratis | gr. xxx |
| | Tinct. Seminum Colchici | ♏x |
| | Aquam. Menth. Pip | ad ℥j |

The colchicum should continue to be given until all pain in the joint has disappeared but should be administered in such doses and at such intervals of time that the full physiological effect of the drug (nausea, vomiting, diarrhea and a tendency to collapse) is never allowed to develop. Some there are who prefer the vinum colchici made from the corm but in my hands the tincture made from the seeds has proved more certain in its effects, more gentle in its action and approaches nearer to a standardization and hence at all times more suitable for accurate dosage.

The claims urged in favor of salicylates as specifics may be dismissed to the limbo of unproven remedies, together with Ebstein's morphine régime. At all times, in season and out of season, the patient should be urged to drink copiously of hot water.

The local treatment of the joint is most important, in view of the fact that wrong local treatment is sometimes followed by disastrous results—even death.

The local treatment should consist in *warmth*—this is the one essential and all important—the manner in which heat is applied to the joint is more a matter of individual preference. The following is as good as any and one recommended by Luff:

| | | |
|---|---|---|
| ℞ | Sodii Carbonatis | ʒiij |
| | Tinct. Opii | ℥ij |
| | Lin. Belladonnæ | ℥ij |
| | Aquam | ad ℥viij |

Some of the lotion should be mixed with an equal quantity of hot water and into the resulting mixture some old fine linen should be put to soak and, when wrung well out, applied to the joint as hot as the patient can stand it. Around the the dressing a yard of thin rubber should be placed with safety pins. Over all a generously thick supply of cotton wool should be wrapped and held in place by a loosely applied four-inch roller bandage. The limb should then be raised by placing pillows beneath it. The bedclothes may be kept from pressing on the joint by cutting out a cradle from a cardboard hat box. During the period of acute pain bed pans and bed urinals should be used. Cold applications should *never* be applied to a gouty joint, as there is danger of converting articular into retrocedent gout with fatal consequences. For the first day or two of an acute attack of gout the diet should be milk in divers forms, such as: bread and milk; tea made with boiling milk instead of with water; milk puddings of tapioca, sago, rice; milk and arrowroot, etc.

As soon as convalescence is established the dietary may be made more generous but the following articles should be forbidden the gouty for all time: Salt meats and salt fish; shellfish (except oysters); all rich pastries and sweets; soups of all kinds; pickled and hot foodstuffs (peppers, curries); the four vegetables, tomatoes, asparagus, rhubarb, green peas; all beers, wines and champagnes (whisky may be allowed if a stimulant is imperative); sugar and table salt (except in small quantities). During convalescence the joint, when pain-free, should be gently massaged and permission to leave the house, if the season be winter, should not be given without thought. The following mixture as a tonic and a prophylactic measure should be continued for two or three months:

℞ Potassii Iodidi. ....................gr. x
Spts. Ammoniæ Aromat..............♏xv
Inf. Gentianæ Co.....................ad ℥j
♏. ft. mist.

Sig. ℥j thrice daily after meals.

For one week after convalescence is established, the colchicum mixture should be taken once daily on rising in the morning. The patient should be warned against a premature relaxation of the régime and cold tubbing forbidden for at least a month. A brisk daily walk of half an hour will do much good toward keeping off the evil day of another attack. The urine should be examined carefully during the attack for albumin and an estimation of the amount of urea and uric acid frequently made. The significance of the presence of albumin after the attack has passed off is obvious.

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**American Medical Association Meeting.**—For this occasion the Mobile and Ohio Railroad will make a rate of one first-class fare for the round trip, viz., $18.00 from St. Louis. Tickets sold May 1 to 4, inclusive, limit 10 days, with privilege of extension to May 30, on payment of 50 cents. Write to Jno. M. Beall, A.G.P.A., St. Louis, for full particulars.

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# CHRONIC PARENCHYMATOUS PULMONARY TUBERCULOSIS.*

BY WM. N. BEGGS, A.B., M.D.,
OF DENVER, COLO.;
VISITING PHYSICIAN TO THE NATIONAL JEWISH HOSPITAL FOR CONSUMPTIVES AND THE DENVER EMERGENCY HOSPITAL, DENVER, COLORADO.

AMONG the vast hordes of pulmonary invalids who seek the Rocky Mountain region in the hope of restoration to their pristine health and vigor, there are large numbers foredoomed to disappointment. This is in a great number of these cases inevitable. Many come without having received professional advice and many in spite of their physician's opinion that their cases are not such as would be benefited by a change of climate.

Eliminating all these, there remains, however, a considerable proportion whose journeys have been undertaken as a result of error in diagnosis, or rather, in estimation of their chances for recovery. We who see so many cases of pulmonary tuberculosis are, to a certain extent at least, responsible for this state of affairs. We probably do not lay sufficient stress upon the differentiation of the different types of this affection and their prognostic diagnosis. Even though these have already been described, they are not sufficiently well recognized as a general rule. Iteration and reiteration of even that which is known is more than justified by the benefit which arises therefrom.

To the physician who deals with cases of consumption, and who in general practice does not, and to the victim of this most widespread affection, the question of prognostic diagnosis is of very great importance. As aid, therefore, to the accurate determination of this element, such classifications as after sufficient use show themselves to be *really practical* and not simply finespun theoretical differentiations are of considerable value. One of these forms the subject of this present paper.

Even the modern text-books on general practice, many of them, show a pronounced tendency to give less attention to the subject of pulmonary tuberculosis than its prevalence and seriousness would seem to demand. The method of discussion and classification also in many cases leave much to be desired. Thus, for example, Strümpell† treats the whole subject of tuberculosis of the lungs in one chapter without subdivision into classes, giving two paragraphs of thirteen lines to a simple notice of disseminated pulmonary tuberculosis and one paragraph of twenty-three lines to the pneumonic form.

Osler‡ presents the classification which is most commonly accepted, viz.: (1) Tuberculo-pneumonic phthisis—acute phthisis; (2) chronic ulcerative phthisis; (3) fibroid phthisis.

With the first and last of these we shall not concern ourselves in this paper. In the description of the chronic ulcerative form he recognizes the numerous pathological lesions which may be present, but describes it, the ulcerative form, as a disseminate form, which it truly is.

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* Read before the Denver and Arapahoe Medical Society, November 18, 1902, and the Boulder County Medical Society, December 4, 1902.

† Strümpell. A Text-book of Medicine. Third American Edition, New York, 1901.

‡ Principles and Practice of Medicine. Fourth Edition. 1901.

Tyson* accepting the same classification, divides the chronic ulcerative phthisis into three stages: (1) Incipient stage or beginning deposit; (2) stage of complete consolidation; (3) stage of softening or cavity formation.

Ordinarily, when we speak of the stage of complete consolidation we refer more or less inaccurately to the consolidation of the conglomerate tubercles, separated by a greater or less abundance of pulmonary tissue which, whether normal or affected by pathologic process, nevertheless has sufficient respiratory power to make it recognizable as performing that function. It is, however, somewhat difficult to determine from his description whether this is Tyson's conception of his second stage or whether he refers to a more massive, widespread consolidation. The physical signs which he enumerates scarcely apply to the former. The latter, in my opinion, cannot be considered the regular, or even a frequent, stage of the most common type of chronic pulmonary tuberculosis which usually has the general form of a distinctly disseminate, lobular or bronchopneumonic type.

These examples might be multiplied indefinitely, but without present profit to us. By them, however, it is simply intended to call attention to the state of affairs in the general textbooks, of which these are excellent representatives.

Powell,† on the other hand, in discussing subacute and chronic tuberculosis of the lungs, speaks as follows: "In a certain not large proportion of cases which commence with the signs of alveolar catarrh, or tubercular alveolitis, the pulmonary disease, instead of assuming the acute and rapidly confluent or disseminated forms above described, follows a more insidious course, in which the destructive changes are affected by a drier and more gradual necrosis. In these cases great thickening of the alveoli, gray induration, in which some individual granules of tubercle may or may not be distinguishable by the unaided eye, is substituted for the more usual and rapidly caseating process. We have, in fact, a local pulmonary tuberculization, of slower and more insidiously destructive progress than caseous pneumonia, so far as the lung is concerned, but more obstinately and continuously progressive, more prone to be succeeded by early implication of the other lung, supposing both are not from the first implicated, more quickly followed (sometimes even preceded) by disease in other organs, particularly the larynx and intestines; and, in short, though a chronic or subacute disease, yet one of more early average termination than the corresponding pneumonic forms of phthisis.

"This form of local tuberculization spreads through the lungs from apex to base, with a well-defined gray advancing margin, immediately beyond which the highly vascular but crepitant lung tissue presents a striking contrast to it. On examination, however, more minutely with a lens, the alveolar walls are found considerably thickened to some little distance (perhaps half an inch) beyond the defined margin, though the alveolar spaces are not occupied with catarrhal cells—at least not uniformly so, or to any material extent. A few outlying patches or nodules may sometimes be observed, evidently of infectious origin. I am not aware of any mere inflammation at all analogous to this in its invasive characters. It most resembles lupus of the cutaneous surface, and since this comparison was first made in the 1878 edition of my work lupus has come to be regarded as a truly tubercular affection, in which a bacillus is found identical with that of tubercle."

The foregoing picture of the changes produced is a very striking one and one that I have seen more than once on the autopsy table. The sum total of the clinical picture is not less striking.* It is, however, exceedingly insidious in its onset and may very easily escape the attention of both patient and physician. The first indication of anything out of the way is very likely to be a simple indisposition and a gradual diminution of strength, which may not be noticed, however, by the patient for some time, and when noticed, may be thought by him to be simply temporary. He thinks he is simply run down. Cough may be present, but is not at all constant. When it is present it is not likely to be troublesome, at least until the later stages of the disease.† Pain is usually absent. There is a gradual loss of appetite, but this may also not be marked until late. So far as the temperature is concerned, it presents nothing very characteristic. There is usually some fever. This is more constant than in the other chronic forms of the disease and more obstinate. The periods of freedom from fever are fewer and of shorter duration. The temperature, however, is usually not high and does not so often give the impression of mixed infection as is the case in the chronic catarrhal form.

A very constant and important symptom is an early, marked anemia, and in a comparatively short time the tuberculous cachexia is well established. In strong contrast with this is the lack of any considerable degree of loss of flesh until later in the disease. Even when the patient is evidently a very sick person he may remain in very good flesh. Hemorrhage is not common. When it does occur it is usually slight and of trivial importance. Night sweats occur frequently and in varying degrees. Increased rapidity of respiration makes its appearance usually early and is quite persistent. Notwithstanding the existence of these various symptoms, often their presence is to be determined only by careful attention. In nearly all cases they do not become intense, with the few exceptions named, until late in the disease, and it is frequently difficult or impossible to convince the patient that he is in a dangerous condition.

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* The Practice of Medicine. 1896.

† On Diseases of the Lungs and Pleuræ. 1893.

* In all the forms of pulmonary tuberculosis the catarrhal symptoms predominate toward the last. Then, in them all, the cough becomes troublesome and the sputum copious. The last stage is not a good one for differentiation, and it is also a matter of indifference, practically, then.

† It is especially the clinical features of this form of the disease which it is the purpose of this paper to emphasize.

I have had the fortune to observe a considerable number of such cases, and in order to illustrate the apparently trivial nature of the symptoms and bring out the physical signs, have selected several case-records from my recent histories, purposely omitting repeated special mention of symptoms which were not present, but might have been expected.

*Case I.*—This case developed in Colorado. No attempt is made here to decide whether or not the infection occurred before her coming to this state in 1891. P. B., female, age thirty-two years, a housekeeper, was first seen by me March 18, 1900. Her mother, three brothers, one sister, and a brother of her mother have died of consumption, the first named in 1898. At the time of consultation one brother was also affected by the disease. Her own personal history was excellent, she not being able to recollect having suffered from any affection except what she called "an occasional touch of rheumatism." She claimed not to have had any symptoms of disease at all until two weeks prior to consultation, when she caught cold, although she had had nasal catarrh for two or three years. At the beginning she had severe cough with some abdominal (diaphragmatic) pain and slight fever. The cough had moderated, the sputum was not excessive, was yellow and thick and microscopical examination revealed a few tubercle bacilli. The physical signs were as follows: The appearance was unhealthy, she was decidedly anemic. The temperature was 97.4° F.; pulse 95, small and soft. The chest form was normal and she was moderately well nourished. The respirations were thoracic in character, regular, easy, 26 to the minute. Palpation revealed no abnormal fremitus and percussion no abnormal dulness. On auscultation the breath sounds were found to be feeble and on forced respiration and coughing a few fine subcrepitants were to be heard in the left second and third intercostal spaces anteriorly and posteriorly.

This was certainly a very incipient case. I know the danger of attempting to classify a case in such an early stage. It is somewhat doubtful whether it belongs to the category under discussion, but some of the symptoms would indicate that it does. The patient passed out from under observation before that could be positively determined.

*Case II.*—N. B., male, a restaurateur, came for examination January 12, 1901, having arrived in Colorado the previous day. His family history is doubtful. His mother died when he was one and a half years of age, the cause of death being unknown to the patient. His father died of the grip. A half sister died in 1899 at the age of sixteen, but the patient had not seen her since her sixth year. His personal health had been excellent, the only affection of which he had any recollection being one of the exanthemata in infancy. Present affection began ten weeks prior to consultation with me in a cold contracted after a definite exposure, since which time he had coughed. About a week after the exposure he had chills and fever daily in the evening for a week. Then in five or six weeks he had pain in the chest which was relieved by treatment. He was then told to change climate. During the first few weeks of sickness he had moderate night sweats. He had not lost any weight. An examination of the sputum, which was scanty, white and frothy, but had earlier been yellow, revealed a few tubercle bacilli. The physical signs were as follows: His appearance was slightly cachectic. The temperature was 98.8° F.; pulse, 98, full and of moderate tension. The patient was moderately well nourished and had normal chest form, but the natural depressions were very distinct. In the left supraclavicular region was an oval, thin scar, the evidence of an abscess which patient had had four or five years prior and which had opened spontaneously. The respirations were abdominothoracic in type, without special characteristics and 24 to the minute. Palpation and percussion revealed a displacement of the heart about three-quarters of an inch to the left. Anteriorly there was moderate pulmonic dulness as low as the second rib on the left side. On auscultation the breath sounds were found to be faint on the same side posteriorly as low as the seventh intercostal space, but somewhat rude with prolonged expiration in the right supraspinous region. There were a very few fine subcrepitant rales to be elicited in the left supraspinous region, but only on coughing. Anteriorly the heart sounds were transmitted to the left.

This was also an early case, somewhat more advanced than the preceding one.

*Case III.*—E. B., female, age twenty-nine years, housewife, consulted me August 20, 1901. She had come from New York two weeks before. She has a brother suffering from pulmonary tuberculosis, otherwise the family history is negative. She herself had the grip two years ago and has been the subject of constipation for the last seven years. For the last three months she has been losing weight and strength. There have been no other subjective symptoms of disease. She has had no cough and no expectoration. The skin was pale, decidedly so. Her temperature was 99.4° F. The pulse was of moderate volume and strength, 103 per minute. The chest form was normal except for a slight flattening of the second rib on the right side. The respiration was chiefly thoracic, somewhat restricted on the right side, rather shallow, quiet and easy. The vocal fremitus was feeble except in the right infraclavicular region. Percussion revealed a decided dulness on the right side anteriorly, reaching from the clavicle to the third rib. In the same region there was slightly exaggerated vocal resonance and fine crepitation on coughing.

*Case IV.*—This case is specially interesting.

L. R., male, single, age thirty years, a collector, was first seen by me September 8, 1901, three days after his arrival in Colorado from Cincinnati, O. His family history was negative. He could recollect no personal illness of any importance. He had had a light attack of the grip, lasting only a couple of days, nine years ago, and had been subject to occasional slight attacks of indigestion. His habits had been good except that he had been a rather free cigarette smoker prior to the beginning of his present sickness; since then he had been abstinent. Christmas, 1900, he "caught cold." A diagnosis of pleurisy was made and he was confined to the house one day. A few days later he had an attack of what was called the grip and was confined to the house over two months. He has lost strength and fourteen pounds in weight. In the earlier months of his sickness he had night sweats. For the last three or four months he has been subject to periods of three to four days' daily chills, fever and sweating in the morning, alternating with three or four days' freedom therefrom. Cough was not troublesome and the sputum was scant, mixed mucus and pus, and the first trace of blood was observed the morning of the examination. His general appearance was strikingly cachectic. His tongue had a moderate yellowish white coat. He stated that his bowels had been loose for five days. His temperature was 99.8° F. at 10 A. M. and his pulse 127, full, but moderately tense.

Inspection showed a normal chest form, with good nutrition but marked sinking of the natural depressions on both sides. There were a few patches of pityriasis versicolor on the skin. The respirations were abdominothoracic, easy, and regular, 29 to the minute. The vocal fremitus was distinct throughout, and a little more marked over the right apex (the left was the one affected). The cardiac impulse could be felt in the fifth intercostal space in the mammillary line. Percussion revealed that the heart was displaced about an inch to the left. There was also marked dulness over the left apex as low as the first rib. In this area a few mucous râles, could be heard together with a prolonged expiratory sound of tubular quality. There was some exaggeration of the vocal resonance and bronchial breathing in the left third, fourth and fifth intercostal spaces, extending from the line of the superficial cardiac dulness to the midaxillary line. On coughing fine crepitation could be heard throughout the left chest anteriorly as low as the fourth rib. Posteriorly only prolonged expiration with slightly tubular quality could be elicited in the left supraspinous region on forced respiration.

A diagnosis of the type of pulmonary tuberculosis under discussion was made and its seriousness explained to the patient. He remained under observation about three months and then disappeared.

March 1, 1902, he reappeared for examination and the following marked changes were found: In the left chest anteriorly there was very decided dulness as low as the fourth intercostal space and posteriorly throughout the supraspinous region. Wintrich's sign with tubular breathing and bronchophony, both vocal and whispered, were obtained throughout a large area bounded by a line running from the lower border of the left pectoralis major and the anterior axillary border to the left sternoclavicular articulation, then downward to the third rib, then downward and outward to the fourth intercostal space an inch to the left of the nipple, then irregularly upward to the point of starting. Whispered bronchophony could also be obtained between the upper angle of the right scapula and the vertebral column. Subcrepitant râles, numerous but very fine, could be obtained throughout the left chest anteriorly and laterally and in the right chest anteriorly as low as the third rib and posteriorly throughout the supraspinous region. The cough had not been troublesome but the dyspnea was slightly increased and the strength somewhat diminished, although there had been a slight gain in weight.

After an explanation of the progress of the case, the patient, being dissatisfied, for which I could not blame him, the condition appearing to him to be rather better than worse, went to another physician for examination. The latter, perhaps not recognizing the type of the disease, informed him that, so far as the pulmonary involvement was concerned, his condition was not serious and that the prospects for recovery were good. With this prognosis I heartily disagreed and predicted a comparatively early fatal termination. About four months later (July 6) the patient developed a myelitis and tubercular cerebral meningitis and died July 27, 1902.

*Case V.*—J. B., female, aged eighteen years, housewife; consulted me November 3, 1900, a week after arrival from Bridgeport, Conn. Her family history was negative. Her general health had been excellent. She had had measles in childhood and a miscarriage at the third month three months ago. Seven months ago patient "caught cold" and has been coughing at intervals since. During the past three months she has occasionally vomited from the coughing. During the last two months, except for the last two weeks, she has had variable, migratory, sharp pains. In about five months time she has lost twelve pounds. She has occasionally had fever and night sweats. Her cough is not troublesome and the sputum is slight in amount, white and frothy.

Patient's appearance is slightly cachetic. Her temperature is 100° F.; pulse 125, full and rather soft. She has a normal chest form and is fairly well nourished. Her respirations, 37 to the minute, are abdominothoracic, shallow, but regular. The vocal fremitus is faint except in the right infraclavicular region. Percussion reveals dulness as low as the second intercostal space on the right side anteriorly. The respiratory sounds are generally diminished, except in the right supraspinous region, where there is roughened breathing with prolonged expiration on forced respiration.

There are a few inspiratory subcrepitant râles, on coughing only, in the region of dulness and in the left supraspinous region and the upper half of the interscapular region. They may be heard on forced respiration in the lower half of the right interscapular region.

By February 1, 1901, there had been added clicking sounds in the third and fourth intercostal spaces to the left of the heart. By August 20, 1901, the dulness had increased in intensity and extent until anteriorly it reached the third rib and posteriorly could be found to extend as low as the seventh rib. There were also subcrepitant râles to be heard throughout the left lung anteriorly above the fourth rib.

On October 29, 1902, the condition was as follows: Anteriorly there was marked percussion dulness on the right side as low as a line drawn from the junction of the second rib with the sternum to the fourth rib, a little anterior to the axillary line, and on the left side as low as the second rib, posteriorly on both sides as low as the fourth vertebra. There were bronchial breathing and vocal and whispered bronchophony over the area of dulness in the left side anteriorly. There was whispered bronchophony in the right supraclavicular region and posteriorly on both sides of the vertebral column at the second intercostal space. Posteriorly there was exaggerated vocal resonance on the left side as low as the sixth rib, on the right as low as the fourth. There were fine inspiratory subcrepitants to be heard on coughing, anteriorly on the right side throughout the area of dulness and on the left as low as the second intercostal space; posteriorly on the right side as low as the ninth rib. On forced respiration subcrepitants could be elicited throughout the lower inch of dulness on the right side anteriorly, and from the first to the second intercostal space on the left side anteriorly. Posteriorly very fine inspiratory subcrepitants could be elicited on forced respiration from the third to the fourth ribs on the right side, and from the apex to the sixth rib on the left.

*Case VI.*—T. H., female, age twenty-four years, housewife; came for examination October 1, 1901. She had lived in Minnesota until four and one-half months before. Her mother had died of consumption in April, 1898, having been sick two years, during which time the patient had been taking care of her. Father, mother, brother, and sister had had occasional fainting spells.

The patient's health had been good. She had had a moderate bilateral goiter as long as she could remember, and she could not notice any increase in its size. She had the grip in December, 1896, and again in February, 1901. Since this latter attack she had never felt as well as before. She has never had a steady cough, either before or after this attack. She has had a more or less steady heavy feeling in the epigastrium, with occasional attacks of acute cramping pains through the abdomen, which would then become general, being accompanied with shortness of breath. There would always be diarrhea with these attacks, the onset being sometimes a little before, sometimes a little after, the beginning of the abdominal pains and lasting four to six days, She would also have severe pains in the upper lumbar region, and about a year and a half ago had inconstant pains in the chest and limbs. In the spring of 1901, for about a month, the ankles would swell during the daytime, the swelling not completely disappearing during the night. With the onset of warm weather this disappeared without any treatment. In the spring of 1900 she had three or four hemoptyses of moderate amount, all occurring within about two weeks, and all being occasioned by excitement or exertion or both.

Her weight was 134 pounds, that being about her usual summer weight. In the spring of 1901 it was 127 pounds. Her usual weight in winter is about 150 pounds. She has had fever, but no nightsweats. At the time of the examination she was suffering with an obstinate diarrhea and has had a constant tendency to that since then, although it has been kept more or less under control.

Her expression is hectic. The temperature is 100.4° F.; the pulse 122; full and of moderate tension. The chest is long and somewhat flat. The nutrition is below par. The respiration, 37 per minute, is abdominothoracic, shallow, regular, not labored. It is somewhat restricted on the left side. The vocal fremitus is faint except over the right apex. The cardiac impulse is felt in the third, fourth and fifth intercostal spaces in the mammillary line. Percussion shows that the heart is displaced to the left, about an inch. There is dulness over the left apex, anteriorly as low as the second rib, posteriorly in the supraspinous region. The respiratory murmur is very faint throughout the chest on ordinary respiration. Above the left clavicle there are inspiratory and expiratory sibilant râles, slightly exaggerated vocal resonance, and, on forced breathing, a tubular quality to the breath sounds. Between the inner third of the left clavicle and the third rib fine subcrepitant râles may be obtained on forced respiration. These may also be obtained, but only on coughing, between the middle third of the left clavicle and the third rib as well as in the right supraclavicular region and both interscapular regions above the fourth vertebra. There is exaggerated vocal resonance in the right supraspinous region and roughened breathing with prolonged expiration in the left. Bronchial breathing could be obtained about two inches to the right of the sternum in the first intercostal space.

The diagnosis of chronic parenchymatous pulmonary tuberculosis in a neurotic patient was made, which the subsequent history tends to confirm, although the progress has not been as marked as in Case IV.

**Note.*—The sister of Case VI came to me July 3, 1902, having been in Colorado one week. She had been in perfect health, so far as she knew, until an attack of measles which began five weeks before I first saw her. Since then she had been coughing, but at the last week in June had been almost free from cough, and now thought that she must have caught fresh cold. The few physical signs of abnormal character elicited were as follows: Patient has a small bilateral goiter, a little larger on the right side than on the left, which began three years ago. She was somewhat pigeon-breasted and not very well nourished. The vocal fremitus was generally faint. The apex beat was to be felt in the fourth intercostal space, one-quarter inch beyond the mammillary line. There was dulness in both supraclavicular and in the left supraspinous regions. There was cracked-pot sound in the left first intercostal space near the sternal border and second intercostal space, just within the mammillary line. There was bronchophony on the left side from the first to the third intercostal spaces, and bronchial breathing in a strip just above the heart dulness from the second to the fourth ribs. Fine subcrepitant râles were present throughout the left side from the apex to the fourth rib anteriorly and the fifth rib posteriorly. There was exaggerated vocal resonance throughout the area of dulness posteriorly. By August 8 the following changes had taken place: The subcrepitant râles had disappeared below the first intercostal space, anteriorly. A few sibilant rales were observed in the left supraclavicular space. The area in which bronchophony, both vocal and whispered, could be elicited was considerably increased. Two or three examinations of the sputum failed to reveal the tubercle bacillus.

This is presented as a doubtful case, though my belief is that it will prove similar to her sister's. If so, it would be of interest as tending to show the part played by an individual or family constitution in the development of the clinical form of tuberculosis.

*Case VII.*—C. F., female, age seventeen years; occupation, housework; was examined April 11, 1902. Her father is dead, the cause not being known to the patient. One sister died of tuberculosis. Two brothers are living, but are sickly. Patient herself had pneumonia in the winter of 1901-02, and has had what she called pleurisy "off and on." Two years ago she caught cold, and since that time has not been feeling well. She has lost strength and has had fever and dyspnea, but no nightsweats. Her cough is somewhat troublesome and accompanied by expectoration of a moderate amount of purulent sputum. She has had one moderate hemorrhage. She has a hectic flush and a decidedly cachectic appearance, but is well nourished. The chest form is normal. The respiration is abdominothoracic, regular and easy, but the difference between forced expiration and forced inspiration is only one inch. Vocal fremitus is imperceptible except in the infraclavicular regions. Percussion gives decided dulness over the left lung as low as the third rib anteriorly, and the angle of the scapula posteriorly, with hyperresonance through the right side. Wintrich's sign, bronchial breathing and vocal and whispered bronchophony are present between the clavicle and the second rib on the left side. In general, the respiratory murmur is very faint. A few fine subcrepitant rales may be obtained throughout the area of dulness on deep breathing.

*Case VIII.*—L. J., male, age thirty-nine years, buttonhole maker; consulted me December 4, 1901. He had been in Colorado three days, having come from New York. Patient thinks that a sister died of tuberculosis in Europe four or five years ago. A brother in Europe is sickly. He, himself, has had no sickness save an affection of the scalp at ten. He has been an excessive cigarette smoker until six or eight months ago, is now abstinent; he has been very free sexually until seven years ago.

In April, 1901, without known cause, he began to feel weak and have a cough. He had moderate nightsweats in the beginning of his sickness. In the middle of September there was "a trace of hemorrhage," and he stopped work. There was another trace four weeks later. He has not noticed fever and the dyspnea has been slight. He now weighs more than his average weight. The cough is not troublesome and the sputum is but slight in amount, mucoid, a little green in the mornings.

Patient has an anemic, cachectic appearance. The tongue is pale and has a slight white coat. His bowels are loose. His temperature 99.6° F.; pulse 82, full and soft. He has a long chest and there is distinct emaciation notwithstanding the fact that he weighs more than usual, there being marked sinking of the natural depressions, specially in the right supraclavicular region. Respiration is abdominal, 18 per minute, and moderate in excursion. Pulsations may be observed in both supraclavicular regions. The vocal fremitus is distinct throughout and exaggerated in the right supra- and infraclavicular regions. Percussion gives very marked dulness over the upper portion of the right lung, reaching from the apex to the level of the third rib anteriorly and the fifth vertebra posteriorly. There is decidedly diminished respiratory murmur in the right second intercostal space anteriorly. Above that, and to the right of the first and second vertebræ posteriorly, there are bronchial breathing and vocal and whispered bronchophony. The same are present in the right supraspinous region, except that the respiratory sound has a distinctly amphoric character. A few rather dry subcrepitant rales may be obtained on forced inspiration. There is cogwheel respiration in the left second and third intercostal spaces anteriorly. Generally the respiratory murmur is faint.

*Case IX.*—C. H., female, age thirty-seven years, a school and music teacher; was first seen December 21, 1899. Her father died of heart disease. Her mother was supposed to have had nasal catarrh; she did have a palatonasal perforation. Patient has always been subject to throat trouble. She had diphtheria at eleven, pneumonia (left) at twenty-two, and nervous prostration at thirty-five. This latter was accompanied by a hacking cough. In August, 1898, she caught cold, had the grip, and has been coughing ever since. She has had some fever with slight dyspnea. She had nightsweats in the winter of 1898-99. Her present weight is about seven pounds below the usual. The cough is moderate, loose, and there is a moderate amount of yellow, stringy sputum. There was a trace of blood in the sputum in September, 1899.

Patient has a decidedly cachectic appearance. Her tongue is slightly swollen and is coated, especially on the right side. She has considerable thirst, and her bowels are loose. Her temperature is 100.4° F.; pulse 134, full and soft. The chest form is normal and there is but slight emaciation. The respirations are abdominothoracic, quiet and easy. Arterial pulsations may be seen in the neck. The vocal fremitus is exaggerated in the right side, diminished in the left. There is marked dulness over the right lung, reaching from the apex to the fourth rib anteriorly, and the angle of the scapula posteriorly. There is roughened breathing with exaggerated vocal resonance throughout the area of dulness, and throughout the rest of the chest there is puerile respiration. In the right supraclavicular region bronchial breathing and bronchophony are to be heard. No râles could be elicited in any part of the chest. Patient died in about a year.

*Case X.*—J. W. H., male, age forty-four years, a stage setter; was first seen by me November 15, 1899. There had been no lung trouble in his family for three generations. His only sickness had been pneumonia (right) in 1894. He was a periodical drinker.

In April, 1899, he caught a severe cold and began to cough and have pains in the chest. Under creosote the pains disappeared, but he began to lose weight and strength and have nightsweats and impaired appetite. He has lost about forty pounds in weight. He has daily fever, with chills, and since coming to Colorado in July has had dyspnea. He had one moderate hemorrhage on the way to Colorado, none before or since. His cough is troublesome and there is considerable thick, solid, white sputum.

Patient has a hectic flush and a decidedly cachectic appearance. The temperature is 101° F.; pulse 113, full and of only moderate tension. The chest form is normal and there is moderate emaciation. The respiration is abdominothoracic, shallow, 40 per minute. The vocal fremitus is distinct throughout and exaggerated throughout the right chest. There is marked dulness on percussion over the right lung from the apex to the fourth rib anteriorly and to the sixth rib posteriorly. Throughout the area of dulness there is either roughened or tubular breathing, with increased vocal resonance. Whispered bronchophony can be obtained in the right second intercostal space anteriorly. A few subcrepitant râles can be heard in the right supraspinous region. Patient died in about three months, a year from the first appearance of symptoms of his disease.

*Case XI.*—S. S., male, age twenty-seven years, laundryman; was first examined March 26, 1901. The family history was negative as far as tuberculosis is concerned. For the past ten years patient has been subject to periodical attacks of diarrhea, recurring every six to twelve months. Patient began to cough about a year ago, but has expectorated but very little, and that at night and in the morning. He has lost weight and strength, and has had fever, nightsweats and dyspnea. Patient is anemic and cachectic in appearance and his fingers are markedly clubbed. He is round-shouldered and his chest is flat. Emaciation is distinct and there is marked sinking of the natural depressions. The lymphatic glands above the right clavicle are enlarged. Respiration is abdominothoracic, shallow, but regular. The vocal fremitus is increased over the right apex. There is percussion dulness in the left supraclavicular region and over the right lung from the apex to the third rib anteriorly, and to the fourth rib posteriorly. The respiratory murmur is very generally faint on ordinary respiration. Fine inspiratory subcrepitant râles may be heard throughout the area of dulness on the right side on coughing. Bronchial breathing on forced respiration and vocal and whispered bronchophony may be obtained on the right side from the supraclavicular region to the second rib anteriorly and in the supraspinous region posteriorly. A trace of cavernous percussion note can be elicited in the right supraclavicular region. Patient has speedily grown worse and has now given up hope.*

*Case XII.*—D. A., male, age thirty-six years, watchmaker; was first seen by me January 10, 1901. His family history was negative. Patient had had pneumonia at twenty-one, from which he had fully recovered. His present trouble began December 26, 1899, and was brought on, he thought, by overwork. He began to lose weight and strength and have some cough. His present weight is 125 pounds, it usually being about 140 pounds prior to the present affection. He has fever, nightsweats and dyspnea. He has never had any hemorrhage. His cough is troublesome and he expectorates a considerable amount of white, frothy sputum. His expression is unhealthy. He has an elongated, flattened chest, markedly emaciated, showing marked sinking of the natural depressions of both sides. His respirations are 32 to the minute, chiefly thoracic, shallow and a little labored. The cardiac impulse is visible in the third, fourth and fifth intercostal spaces in the precordial region. The vocal fremitus is distinct but symmetrical. Percussion reveals dulness over both sides of the chest as low as the third rib anteriorly and as low as the fifth vertebra posteriorly on the right side and the seventh on the left. A cracked-pot note may be obtained in the left third intercostal space at the mamillary line. Bronchovesicular breathing is found in the right apex above the first rib anteriorly; elsewhere the respiratory murmur is diminished. A few subcrepitant râles may be heard throughout the area of dulness, but only on forced respiration or coughing. A case of early considerable involvement of both lungs with bad prognosis.

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* Patient died the last week in December, 1902, since the writing of this paper, a little less than three years after the onset of the disease.

*Case XIII.*—G. S., male, age thirty-nine years, painter, came to me May 9, 1900, five days after his arrival from New York. His family history was negative. He had had typhoid fever seventeen or eighteen years ago, and right-sided pneumonia two weeks later, being sick two or three weeks each time. He had had no other sickness that he could remember. Ten weeks prior to coming to me the patient had had the grip, but continued to work. He had some fever and coughed a little. In a few days he seemed to be entirely well, but about a month later hoarseness began to develop. This increased steadily so that in about six weeks he was almost aphonic. In a period of two months he lost thirteen pounds in weight.

For a week before coming to Colorado he had had nightsweats and, for the last eight or ten days, some fever. He had no dyspnea before his arrival here. During the last two weeks his cough had been troublesome and he expectorates a moderate amount of white or a trifle greenish sputum. Patient has a slight hectic flush and the appearance of a man with a slowly wasting disease. His tongue has a white coat with a red tip. His temperature is 99.8° F.; pulse 112, soft and full. His chest form is normal and there is but slight emaciation. His respirations are thoracic, 25 per minute and shallow. The cardiac impulse is visible in the fourth and fifth intercostal spaces at the mammillary line and for about an inch within. Percussion shows marked dulness anteriorly on the right side from the pulmonary apex to the level of the third rib and on the left side above the first rib. Posteriorly the dulness extends as low as the fifth vertebra on the right side and the fourth on the left. The respiratory murmur is generally faint. Sonorous and crepitant râles may be heard in both supraclavicular spaces. Sonorous râles occur throughout the chest. Creaking sounds obtain in the right supraclavicular and mammary regions. Bronchial breathing and whispered bronchophony may be elicited in the right supraclavicular and supraspinous regions and in the first intercostal space just to the right of the sternum.

This is, evidently, the most rapidly progressive of the cases cited and there may be some room for doubt as to its exact classification. I believe, however, that it may be properly placed in the company to which I have assigned it.

*Case XIV.*—A. B., female, age twenty-seven years, housewife; was first seen January 17, 1899. There was no history of pulmonary disease among her blood relatives, but her husband is tuberculous and was so prior to the development of her illness. Her own health had been good until five years ago, since which time she has had periodical attacks of pains above the groins which she ascribed to her ovaries and which have almost always beeen accompanied by vomiting. In August, 1898, when in a weakened condition, she had an attack of sore throat* with swollen tonsils accompanied by high fever and cough. There were also slight hemoptysis and nightsweats. Great loss of strength was also present. When the acute symptoms subsided convalescence was not perfect. She fell into the hands of an irregular practitioner whose great hobby is "diet," which with him, so far as I can learn, consists principally of starvation. When the patient came to me there was daily fever with severe nightsweats and dyspnea on slight exertion. The cough was troublesome, especially at night, and was accompanied with the expectoration of copious white, frothy and yellowish, thick sputum. She was cachectic in appearance. The tongue was coated and there was a decided tendency to looseness of the bowels. Her temperature was 100.8° F.; pulse 115, soft and of moderate volume. Patient's chest was slightly pigeon-shaped and there was a moderate degree of emaciation. There was sinking of the infraclavicular spaces, especially of the right. Respiration was chiefly thoracic, 33 per minute, regular and not labored. The vocal fremitus was distinct but symmetrical. Throughout the right chest there was exaggerated percussion resonance and also increased vocal resonance. In the left chest there was marked dulness in the supraspinous region, also anteriorly from the apex to the third rib except in the first intercostal space where there was a cracked-pot sound. In this latter region and extending downward along the sternum into the second intercostal space were also cavernous breathing and vocal and whispered bronchophony. There were no râles.

As is usually the case, there were intermittent periods of care and carelessness on the part of the patient. The disease gradually but steadily progressed until the entire left chest was involved. September 12, 1900, the dulness extended as low as the fifth intercostal space anteriorly and the angle of the scapula posteriorly. At that time numerous rather dry subcrepitant râles were present throughout the left lung.

The husband, not being content with my repeatedly expressed bad prognosis (expressed to him, not the patient) consulted another physician who maintained that "as long as there was life there was hope" but the patient died in the middle of August, 1901, three years after the onset of the first symptoms.

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*At that time there was in Denver an epidemic of infectious sore throat which some of the members of the profession regarded as grippal in nature. I saw sixteen cases in one house, one of them resulting in tonsillar abscess, another in cervical abscess. Another case seen in consultation developed a malignant endocarditis with a septicemia, the termination being fatal. Several cases of septicemia were noted in this epidemic having their origin in the pharyngeal infection. This goes to show that the infective pharyngitis mentioned in Case XIV probably had no relation to the pulmonary tuberculosis save to prepare the way for it.

The foregoing histories present a picture, I think, sufficiently characteristic. Too chronic to be assigned to either of the forms of acute pulmonary tuberculosis (the disseminate or the pneumonic type), they present a symptom-complex quite different from that of either chronic catarrhal pulmonary tuberculosis (Osler's chronic ulcerative form) or the fibroid phthisis.

As regards nomenclature,* a suitable name is not just easy to obtain. Powell (*loc. cit.*) says "chronic tubercular phthisis seems to be the best clinical name for this variety, and one which at the same time indicates the pathological process." He also in his classification names it "chronic pulmonary tuberculization." Neither of these seems to me to be perfectly satisfactory, especially the latter term, for all forms of chronic pulmonary tuberculosis, whether of the type under discussion or the catarrhal or fibroid varieties, are equally well designated by it. Where I obtained the name forming the title of this paper I do not know. Possibly I may be responsible for it myself. It is evidently used to contrast this with the catarrhal and fibroid forms. It is, however, not much, if any, better than those used by Powell. In all forms the parenchyma is involved and in the present form all of the pulmonary structures are equally affected. We might use the term pan-pulmonary tuberculosis but it is open to the objection that wherever tubercles occur in the lungs all structures are involved and that it might be held to imply that the entire lung is affected. A suitable term for massive, progressive involvement I am not at present prepared to give.

In conclusion I would sum up that this form of pulmonary tuberculosis is worthy of special attention and recognition for the following reasons:

(1) It is a perfectly characteristic type of pulmonary tuberculosis, distinctly different from those generally recognized. (2) It is constant in its progress and bad in its prognosis. It is scarcely less fatal than phthisis florida though its duration is longer. (3) It is very insidious, and this tends to cause error on the part of the physician and a mistaken sense of security to both patient and medical adviser. (4) The preceding two reasons render its early recognition of great importance to both physician and patient.

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*I wish to emphasize more than is done in the body of the paper my recognition of the fact that the term parenchymatous as applied to this form of the disease is not a satisfactory one. There is no such thing as a pure interstitial pulmonary tuberculosis, yet the name is very generally applied to that type of disease often called "fibroid phthisis." This is the one form in which the name most clearly corresponds to the predominating anatomical condition. There is also no such thing as a strictly catarrhal tuberculosis. That name, however, is used without objection for Osler's chronic ulcerative type, although in this the deviation from the anatomical condition expressed by the term catarrhal is very great. No more does a strictly parenchymatous form of the disease exist. I do not attempt to defend the name on that ground. As said in the body of the paper, it was used evidently (and by whom first I do not know) to contrast clinically this form from the other two well-recognized types.

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# SPINAL CORD INJURY, SO-CALLED CONCUSSION OF THE CORD.*

BY FRANK PARSONS NORBURY, M.D.,
OF JACKSONVILLE, ILL.;
PHYSICIAN-IN-CHARGE MAPLEWOOD SANATORIUM FOR NERVOUS AND MENTAL DISEASES; NEUROLOGIST TO OUR SAVIOUR'S HOSPITAL; CONSULTING PHYSICIAN TO ILLINOIS INSTITUTION FOR THE EDUCATION OF THE BLIND.

IT is unfortunate that a truly scientific interpretation of concussion of the spinal cord has not yet been attained. As a result more or less controversy exists as to its real merits and its true pathology. It is a term that has become established by long usage and even in the light of modern pathology thus far no term has been accepted which fully covers the clinical picture which it aims to represent. As experience is accumulated in the observations of such cases and as neuropathology becomes more exact, it is to be hoped that this disputed condition in neurologic medicine may become more defined. From my own observation and study of the literature, I have concluded that the underlying lesion, in so far as the cord is concerned, is disturbance of the circulation and injury to the blood vessels and lymphatics. Hemorrhage is, I believe, the lesion and this hemorrhage is into the substance of the cord (intramedullary). In support of this we have, on the surgical side of the controversy the observations of Kocher, made with his characteristic originality, those of Thorburn and also the observations of Horseley who as a neuropathologist as well as a surgeon stands preeminent. Then the work of Charcot, Oppenheim, Dana, Walton, Strümpell on the side of the neurologists, most of whom are inclined to view the structural changes as probable. Other observers, notably Wagner and Stopler, lean toward this belief. Neurologists, however, have varied views, some of which are essentially hypothetical. Most of them agree that degenerative changes or secondary vascular changes are responsible for the symptomatology of the disease. In support of this view of hemorrhage, facts seem to be accumulating that are both tenable and reasonable.

Many injuries to the spinal cord have no external evidences of injury to the spinal column. The column itself is intact and injury to the cord is due to the traction put upon it by the violence of the accident or to severe contusion. The symptoms which follow, many of which are slow in appearing, indicate structural changes occurring in the substance of the cord or to irritation arising from meningeal involvement. In pronounced cases of hemorrhage the symptoms are those of sudden interruption of the functions of the cord and the varied sensory and motor changes soon enable a diagnosis to be made. The localization of the lesion usually can be outlined. The progressive degenerations, which sooner or later follow, serve to more fully establish the diagnosis and the seat of the lesion. In the less extensive lesions the symptoms may vary, and by reason of the fact that hemorrhage may disappear, the continued interruption of cord function is rare. Sometimes this fact confuses the diagnosis but ordinarily it should not, but, on the contrary, should be accepted as evidence of the previous existence of hemorrhage. In the obscure cases which have latent symptoms and slow convalescence the lesions have been less pronounced and probably in regions where the functional activity is less liable to be influenced by hemorrhage.

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* Read before the Mississippi Valley Medical Association, Kansas City, Mo., October 15, 1902.

Certainly in the so-called cases of chronic traumatic neurasthenia, which are slow in development, we have some evidences of functional impairment not unlike those noticed in cases of hemorrhage where the diagnosis is not questioned. For this reason we have a comparative basis at least, for reasoning that in concussion of the cord, which is only a part of chronic traumatic neurasthenia, we have some evidence that hemorrhage is the lesion for special interference with activity of the spinal nerves. I have noticed system symptoms in one case where the sensory changes were limited to one side and vasomotor symptoms, also unilateral, all of which lead me to believe that the original lesion was intramedullary and probably hemorrhagic. The root symptoms in this case were noticed at the beginning, showing irritation which may have been meningeal but late root symptoms, also noticed in this case, may have been from degeneration of the cord.

Bruns and Worscheid call attention to a fact due to the anatomical peculiarity of the origin of nerve roots. "That in otherwise serious lesions those nerve roots which merely pass by the injured cord to reach their point of emergence from the spinal cord and which, for instance, in the dorsal portion of the vertebral canal are derived from segments considerably above the seat of the injury are well preserved; while, *a priori,* it would be assumed that these roots, lying as they do particularly close to the injured cord, would be more liable to be affected than the cord. In general the roots are more resistant than the cord and this not only with reference to traumatic lesions; to be sure their power of resistance does not go beyond a certain limit; when the trauma is very forcible, they are likewise torn."

Hemorrhage is common in traumatism of the cord. Oppenheim states that fully nine-tenths of the cases of traumatic injuries to the cord have hemorrhage as a factor in the production of symptoms. Falls on the head or violent throwing of the body forward, striking upon the head, as in railroad accidents, causes a bending of the body, near the cervical-dorsal junction, strains the cord and thus causes hemorrhage, without any evidence of injury to the spine itself. The hemorrhage is in the gray matter of the cord, as is shown by the symptoms, viz., involvement of the posterior horns, also the anterior horns, or both. In pronounced cases the hemorrhage usually diffused longitudinally, producing system symptoms. Dr. Black had one such case which beautifully illustrates the progress of the diffusion of the hemorrhage by the progressive evidences of sensory involvement. In this case there was no question as to the diagnosis, but, in cases not so pronounced at first but which weeks later show progressive system symptoms, are we not justified in believing that hemorrhage existed? I see no reason why tubular hemorrhage cannot occur slowly and by degrees as well as rapidly.

Take the cases where brachial symptoms are slow in development, is it not possible that hemorrhage has occurred in lower cervical regions? Or the more common cases where irritation with paralysis occurring later, in which the bladder and rectum are involved, that hemorrhage has occurred in the lumbar region? I know these are well-defined cases and are not truly of the type classed as concussion of the cord, but they are nevertheless frequently called cases of concussion. In my judgment they give us a clue as to the conditions existing in the more obscure cases.

In comparing the symptoms as they appear in chronic traumatic neurasthenia with those of concussion we note a similarity, especially as regards the sensory and vasomotor changes. For example; take the special senses—vision, which is interesting and worthy of exhaustive observation.

In traumatic injuries of the cord in the lower cervical and upper dorsal is it not unusual to have mydriasis, or narrowing, or immobility, of the pupil. Albert explains this by saying that the nerve center which controls the size of the pupil lies in this part of the cord and is therefore exposed to irritation. I have noticed this feature in one case of so-called concussion of the cord. Again, the subjective asthenopia, the misty field of vision and the sense of fatigue on using the eyes. Also, photophobia, in consequence of which the patients want to remain in the dark. The subjective symptoms, however, wherever found, usually belong to the pure neurasthenic cases, where the brain symptoms, so obscure in their pathology, predominate. We are not yet safe enough in our advancement in neuropathology to claim that neurasthenia has or has not a structural basis. The mental element in these cases rules the phenomena of the disease but withal we find many symptoms which can be explained by circulatory changes.

It is impossible, in the study of concussion of the cord, to eliminate the psychical element,—that element which eventuates in the development of traumatic neurasthenia. The importance of recognizing the definite and demonstrable symptoms is evident because frequently the subjective symptoms coming on suddenly completely obscure the real, the objective symptoms. The symptoms which come on gradually and are sufficiently pronounced to be a source of disturbance to the patient, are the ones which in my judgment proclaim the hemorrhagic origin of the disease. The pathology of this condition, while more or less speculative, is nevertheless leaning toward the hemorrhagic theory. Nervous diseases, for many years said to be functional, are, in the light of modern inquiry, looked upon as due to organic changes, be these changes ever so minute and so, in concussion of the cord, I am sure will, as the research work goes on, be demonstrated beyond question to be due to hemorrhage or circulatory changes affecting in some way the minute structure of the cord.

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## REPORT OF A CASE OF MONOCULAR INFERIOR HEMIANOPSIA.

BY E. S. SAYLOR, M.D.,
OF PHILADELPHIA.

Miss X., aged seventy-seven, school teacher. She has always been a well woman with the exception of a marked tendency to faint and several severe attacks of rheumatism.

On September 15, 1900, she fainted and, in falling, struck her head against a heater which produced a large wound with profuse hemorrhage and swelling of the surrounding tissue. She has never bitten her cheek or tongue in one of these attacks. There is now a depressed scar at the site of the wound which corresponds to the motor center for the leg and arm (Fissure of Rolando).

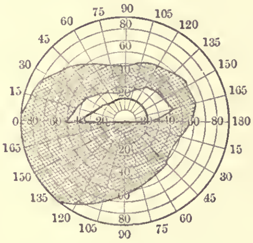
Two weeks later (Sept. 28), while adjusting her bonnet, she turned her head, not suddenly, to look in the glass when she experienced a flash of light followed by a dimness of vision in the left eye. Later she discovered that, when looking directly at an object and then closing the right eye, she saw but the upper half of the object. She describes the dimness as a thick cloud or veil. She has experienced no pain nor noticed any inflammation in the eye at any time. When I saw her for the first time after the dimming of vision, which, by the way, was five weeks later (Nov. 7, 1900), I made the following notes:

Right eye, vision, ${}^{5}/_{7.50}$ corrected ${}^{5}/_{5}$. Lower half of bulbar conjunctiva congested (this she informed me had existed since childhood and that many oculists had endeavored to remove it by medication). Cornea clear with the exception of a barely perceptible arcus senilis. Pupil small—2 mm.—almost round reacting promptly to light and distance. Anterior chamber of normal depth. Lens, slightly hazy. Vitreous clear. Disk oval with long axis at 90, a little grayer than normal—no retinal changes. Tension—normal. Left eye, vision $= {}^{2}/_{45}$. Cornea clear, no disturbance of sensation. Anterior chamber somewhat shallow. Pupil oval and slightly larger than its fellow—3 mm., and reacts promptly to light and distance. Lens swollen and hazy, striations marked in periphery. Vitreous clear. Disk probably a little prominent especially the upper half and is of a yellowish hue. No cupping at any point. Both arteries and veins are smaller than those of the fellow eye but there is very little if any difference between the superior and inferior vessels which can be followed to their remotest ramifications. Retina is not detached at any point, but gives the impression of being a little hazy. No red spot can be seen at the fovea nor any macular change whatever. The column of blood is not broken in any vessel. No pulsations can be detected. Tension—normal.

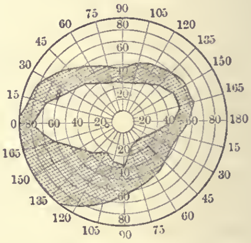
The right visual field is concentrically contracted for form and color. The left field is limited to the upper half, which is, itself, very much contracted—the extreme points being as follows:

Fifty to the temporal side, 25 above, 40 to the nasal side and the horizontal meridian as the lower boundry, (see chart and notice that the line runs directly through the fixation point), the fields for red and green being almost as large as the form field, and are concentric.

Examination of the urine showed no trace of sugar or albumin but an excessive amount of uric acid. Heart sounds are normal, pulse good, arteries not so hard as one would expect considering the age of the patient. There is, however, slight edema of the ankles.



Form field taken Nov. 7, 1900. Field for red indicated by black line.



Form field taken Nov. 27, 1900.

There has been no uncertainty of vision or headache at any time previous. In fact the patient does not know what a headache is, having never had one. The injury to the head in my estimation has nothing to do with the case unless to precipitate the trouble.

Of course our first thought is of embolism of the superior branch of the central artery of the retina and of detachment of the same. But there are no signs of either of these.

Cortical disease I considered out of the question, owing to the regularity of the limiting line below, the trouble being in only one eye, and the fact that I could get no reaction of the pupil when throwing a minute ray of light on the blind half of the retina (Wernicke test).

I finally arrived at the conclusion that it must be a retrobulbar neuritis of rheumatic origin and administered the salicylates with the gratification of seeing the vision rise rapidly from ${}^{2}/_{45}$ to ${}^{5}/_{12}$. The field increased very markedly also. On November 27, 1900, the points were as follows: Temporal side, 80, above 35, nasal side 50 and below 35. Later I ordered hydriotic acid and strychnine, corrected the refractive error and obtained ${}^{5}/_{6}$ vision.

## HYDRAGOGIN—SOME OBSERVATIONS UPON ITS USE IN DISEASES OF THE HEART AND KIDNEYS.

BY M. LOEWENTHAL, M.D.,
OF BROOKLYN, N. Y.

New remedies are being forced upon the profession faster than their names can be committed to memory, and it is no wonder that the busy doctor justly ignores many of these new drugs, until those clinicians, whose work and opportunities favor experimentation and investigation, have determined the just and practical value of any one drug and separated the products of real efficacy from the worthless—"have gleaned the wheat from the chaff." The old adage of *"proving all things, holding fast to that which is good,"* cannot be applied in private practice, for the man who intends to carry out this precept, by trying every new remedy proposed will frequently have cause for regret, and his patients will often find it to their advantage to seek advice elsewhere.

Hydragogin is one of the newer remedies tested thoroughly in clinics abroad and with very satisfactory results. Results which fully establish its merit and warrant its general use and the further study of its properties in detail. This preparation was first introduced to the medical profession of Germany with warm commendation by Dr. K. Goldberg of Berlin, who in a paper* advocates its use in cases in which a reliable diuretic is necessary—Dr. Goldberg obtained very favorable results in more than one hundred cases, and in some cases surprisingly favorable results after all the known diuretics had been tried in vain. Other noted observers impressed with the results obtained by Dr. Goldberg, took it up and cited their experiences in many journals in the old country. In this country, the inundation of so many foreign drugs along with hydragogin never gave the latter the recognition which it certainly deserves. In 1899 Dr. Speier of Janesville, Wis.,† suggested that hydragogin be given a thorough trial.

Before entering upon a consideration of the therapeutic value of this remedy, let us direct our attention for a few moments to the study of its composition and the arguments to be drawn from the standpoint, of why it should be a remedy of value to the physician. Hydragogin is put up in 15 gram bottles, containing 1.5 gram tincture digitalis and 2.5 gram tincture strophanthus. The other ingredients entering into the compound are scillipikrin and scillitoxin, the active principles of scilla maritima. To this is added 0.5 grams of oxysaponin, an extract from herniaria glabra, a gray, amorphous powder, with pungent, irritating odor. Given by itself, oxysaponin is slightly diuretic and causes thin, watery discharges from the intestines. Hydragogin on the contrary constitutes a diuretic much more active than any one of the ingredients singly, or any combination of them without oxysaponin. From observations made by Privatdocent Dr. Boruttau at the Physiological Institute at Göttingen, hydragogin is not very toxic, whether administered by mouth or hypodermatically. In frogs, the heart is arrested in systole. In warm-blooded animals, large doses produce fatal results after marked increase of blood pressure. Section of the vagus caused slowing of the pulse; with the vagus intact, the heart's action is accelerated. Diuresis is markedly increased, and in rabbits also thin, watery stools were caused.

I will now discuss the therapeutic advantages to be derived from the administration of hydragogin. I can do no better than cite a case which came under my treatment on Jan. 2, 1902.

*Case I.*—Mr. George H., aged forty-three years, a commercial traveler, developed nephritis after exposure to malarial influences during a business trip in South Carolina. Not feeling so very badly, he proceeded on his way home, but at Richmond, Va., he was compelled to seek advice, as his condition grew worse. A letter from Dr. R., of Richmond, gave me the following history: The patient's urine was smoky, variable in quantity, containing about one-seventh of its volume of albumin, with hyaline and granular casts. There was general edema, with consequent dyspnea, spasmodic breathing, interference with heart's action, and pains in the limbs. He improved under treatment sufficiently to be removed to his home in Brooklyn, but the fatigue of travel proved too much for him and he arrived in a state of extreme prostration. I was called to see him on Jan. 2 and found his heart acting feebly and tumultuously, beating 130 to 150 per minute; pulse scarcely perceptible at the wrist; temperature normal; pinched features; eyes pearly; dull yellow skin; surface cold; clammy sweat; broad tongue, moist, pale and cold to the touch; great precordial distress; dyspnea; excessive restlessness; moaning; hiccough; distention over lower pleura; tumid abdomen; absolute and complete suppression of urine and incessant violent retching and vomiting. Diagnosis, chronic diffuse nephritis. I had the patient placed in a hot bath, dry cups over the loins, and the abdomen enveloped in hot turpentine stupes. Jan. 4, I again saw him. He had not improved very much, so, in addition to the above treatment, I now prescribed hydragogin in 10-drop doses every two hours, with a diet of boiled milk and lime water, to be repeated as often as it was vomited. This treatment, which also established catharsis, was persisted in with such modifications as circumstances required. The irritability of the stomach gradually abated on the restoration of the secretion of urine (Jan. 8).

Hydragogin was then given in 15-drop doses every three hours, and the symptoms continued to abate in severity. On April 1, his urine was found to have a specific gravity of 1.022, was slightly acid, and daily averaged 36 ounces; no casts, and not the slightest trace of albumin were discernible. Improvement had been rapid. His flesh had become firmer and of rosier color, all puffiness had disappeared from the face, and all swelling from the lower extremities. Some abdominal distention remained. Of course, the diffuse nephritis was not cured, but all untoward symptoms had subsided. The remarkable results achieved in the treatment of this case led me to prescribe it in other cases, of which the following may be interesting:

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* Verhandlungen des XVII. Congresses für Innere Medicin.
† Wisconsin Medical Recorder, Dec., 1899.

*Case II.*—William McG., Scotch, sixty-five years of age, park laborer. I was called to see this patient Jan. 15, 1902. His history is as follows: Two months ago he had an attack of rheumatism in left knee and hip. These joints swelled up, became exquisitely tender, but not red; feet have been swollen more or less for the past year and a half; he has passed urine in only small quantities for the last seven months; he is troubled occasionally with headache in the frontal region; has lost his appetite, is dyspeptic and has cardialgia at times. On the slightest exertion he has a fluttering about his heart, with slight precordial pain, blueness of the lips, and dyspnea. He has chronic bronchitis, with thick mucopurulent expectoration, which has been troublesome for four months. Bowels much constipated, with movements only once or twice a week. He has been a hard drinker for years and often drinks before breakfast, and on an empty stomach during the day. He has had a chancre, but no secondary symptoms.

When I first saw him, on the above date, he had extreme anemia; conjunctiva and other mucous membranes, as well as the skin, almost white; tongue flabby, but not coated. He complains of great weakness and pain in the stomach and in right leg. He has edema of both legs, thighs and in the cellular tissue of the abdominal walls, with moderate ascites. Temperature normal, pulse 83, very weak, intermittent and irregular; respiration 24; much cough with fine râles. Heart, increased area of dulness, weak impulse, no murmurs. Prescribed pulv. jalap. co. gr. xxx, with hydrarg. chlor. mite gr. v. Jan. 17, 1902. Ordered hydragogin gtt. x every three hours.

Jan. 19, 1902. Saw patient at 11 A.M. Pulse 80, stronger, less irregular or intermittent. Urine, 13 ounces; sp. gr., 1.022; no albumin. Treatment continued.

Jan. 21, 1902. Pulse 76, stronger. Urine, 32 ounces, sp. gr. 1.022. Treatment hydragogin gtt. x every four hours. Jan. 23, 1902. Heart impulse stronger; pulse almost regular; urine, 35 ounces; sp. gr., 1.020. Treatment hydragogin gtt. x three times daily.

Jan. 31, 1902. Urine, 40 ounces; sp. gr., 1.023. Feb: 8, 1902. Urine, 37 ounces; sp. gr., 1.022; traces of albumin. Prescribed hydragogin gtt. xii every 2½ hours. Feb. 16, 1902. Patient up and around his room, feeling very well; urine, 34 ounces; sp. gr., 1.024; pulse 70, full and regular; hydragogin stopped and patient put upon a ferruginous tonic.

It can readily be seen here of what advantage this remedy proved to be in this case of cardiac dilatation with anascarca and bronchitis.

*Case III.*—Jennie W. R., aged fifty years, married. On Feb. 3, 1902, was called to her house and received the following history: Five weeks before, the patient noticed that her feet were much swollen, and that her urine was scanty and dark-colored, and her appetite completely gone. At the same time, her heart troubled her more than ever. She had suffered for several months with vague pains and palpitation in region of the heart, with sense of suffocation and shortness of breath. She had symptoms of a chronic bronchitis for a long time previously. Five years before, had a sub-acute attack of rheumatism. Gives also a history of syphilis and hard drinking. She is dropsical all over body, with ulcers on her legs; extreme orthopnea; cyanosis extreme; pulse imperceptible. On examination, heart greatly hypertrophied and dilated; action extremely rapid and irregular; double murmur at base; single systolic murmur at apex; heart beats, 190; respiration, 48. Urine passed, about one pint all day, dark, 20 per cent albumin, containing urates; sp. gr., 1.028. Diagnosis, cardiac hypertrophy and dilatation; bronchitis; general anasarca. Prescribed hydragogin gtt. xv every three hours. Feb. 4, condition about the same; treatment continued. Feb. 5, cyanosis disappeared, edema less. Heart more regular, and intermits only every 20 beats, rate 115. Pulse can now be distinctly felt and is quite regular. Patient is able to lie down in bed. Urine, 23 ounces in twenty-four hours, light in color, albumin 15 per cent; sp. gr., 1.026. Part of urine is passed involuntarily. Treatment hydragogin gtt. xii every four hours. Feb. 7, heart is quite regular and much stronger, rate 85; edema has entirely disappeared from body, but not from legs. Urine, 28 ounces in twenty-four hours, albumin ten per cent, all passed voluntarily. Treatment continued to Feb. 15, when I ceased to make any more visits, as patient progressed so nicely. On Mar. 4, I was sent for, and found that gangrene had set in on ulcers of the leg, and patient desired to go to a hospital for treatment. I heard from her on April 11, stating that she was doing well.

*Case IV.*—Michael O'C., aged fifty-two years, Irish, laborer. Was called to see patient on Feb. 11, 1902. About a year previous I had treated the patient for dilatation of the heart; he had gotten relief and resumed work. He did comparatively well until four months ago, when he had an attack of pain in the region of the heart, accompanied by palpitation, dyspnea, vertigo, blueness of the lips and ears, and slight edema of the ankles. He had also an occasional dry, hacking cough, with watery expectoration. He was a moderate drinker. Had chancre about four years ago; no secondary symptoms. Had been vomiting for the last two weeks; has taken no food, not even milk. Has passed sufficient urine, and his bowels moved every other day, unless he took a cathartic, which was very seldom. No family history of cardiac or pulmonary disease. Had rheumatism six years ago; no cardiac symptoms. When I first saw him on Feb. 11, he appeared to be a well-developed and well-nourished man. Has extreme dyspnea; breathing much accelerated, 50 to the minute; orthopnea; extreme cyanosis of lips and face. Cardiac action very much labored and weak; heart sounds indistinct; asystolism; heart irregular in rhythm and force; pulse imperceptible. Rate of heart, 150 to the minute. Edema of feet and abdominal cellular tissue, pitting slightly on pressure. Fluid in both pleural cavities. Heart much dilated, with diffused and feeble apex-beat. Slight mitral regurgitation and double aortic murmurs. Urine was sufficient in quantity, dark-red in color with sp. gr. 1.020, containing no albumin. Diagnosis: Cardiac dilatation, with anasarca; rapid action of the heart. Prescribed a purge of calomel and jalap, and then hydragogin gtt. xv every three hours. Feb. 12, feels easier. Feb. 13, heart's action much stronger, fuller, and very perceptible at both wrists, still irregular in force and rhythm, but less so than formerly; dyspnea and cyanosis less. He rests in bed, on a general diet. Urine, 40 ounces; sp. gr., 1.024, acid. Treatment, hydragogin gtt. x every four hours. Feb. 15, heart beats at the rate of 90 per minute, full and strong, but still markedly irregular in force and rhythm. Urine, 48 ounces; sp. gr., 1.024. Treatment same as day before. Feb. 16, 17 and 18. Improving, treatment continued. Feb. 19, pulse strong and full, compressible, but still irregular and intermittent, 72 to the minute; no dyspnea while lying in bed; urine same in quality, amount, 45 ounces daily. Prescribed hydragogin gtt. x every 2½ hours. Feb. 26, improving gradually; is very comfortable; no dyspnea or cyanosis; pulse 75 to minute; still irregular and intermittent, but much improved in strength and caliber; edema entirely gone. Hydragogin was now given in 10-drop doses every four hours. March 2, no dyspnea. Is up and about room. Urine sp. gr. 1.020, amber, acid, no albumin. Hydragogin in 5-drop doses three times daily was ordered. March 10, pulse still irregular and intermittent. Patient feels quite comfortable. Ordered him to increase hydragogin to gtt. x three times daily.

*Case V.*—Mrs. X., widow, aged forty-six years, to whom I was hurriedly called on Jan. 19, 1902, suffered from pain in precordial region for over one month; had also had palpitation and dyspnea and a mucopurulent expectoration, which had been only temporary. The pain in the heart often radiated to shoulder and back, and at times was quite severe, accompanied by fluttering sensations under the left nipple. Has suffered some from headache, and at times has had attacks of amblyopia, and often sees spots, black and white, before the eyes. Her urine has been very scanty and dark-colored, and she would go sometimes 24 hours without passing any. It contained a sediment. At the time her urine gets scanty, her feet swell to an immense size. She has suffered from dyspeptic symptoms for the last year and a half; never vomits, but suffers considerably from pyrosis and gaseous eructations. She has never had any acute sickness since childhood; takes whisky regularly, sometimes in excess, often on an empty stomach. At times, when she is on one of her sprees, she does not eat anything for several days. I found my patient to be a very stout and apparently well-nourished woman. She has considerable cyanosis about the ears, neck and lips; extreme dyspnea, and much inclined toward somnolence; legs very edematous; arms and face much swollen. Temperature normal; pulse 135, small irregular, weak and compressible; urine dark-colored, and had passed about a goblet full in last 24 hours; sp. gr., 1.028; no albumin; has incontinence of urine and involuntary movements of the bowels. Very labored respirations (36); suffers also from nausea, can take only milk and lime-water. Examination showed hydrothorax with ascites. Increased area of dulness over heart, with diffused and feeble apex-beat. Double aortic and systolic murmurs, probably secondary to the dilatation and not to the valvular disease. Diagnosis: dilatation, Bright's disease; cirrhosis of the liver; anasarca, ascites, hydrothorax. I prescribed for her 35 grains of compound jalap powder with five grains of calomel. Jan 20, I gave her hydragogin gtt. xii every three hours. Jan. 26, pulse from 135 has gone down to 106, much stronger and regular; urine increased markedly, and though there is still incontinence, it is not so constant. The patient is much brighter and the somnolence lessened, though still present; her dyspnea is much diminished. Treatment continued. Jan. 30, patient felt so well that she got up and sat in a chair for an hour; the heart is much stronger in systole and more regular in force and rhythm; pulse strong, regular and full; urine increasing. Treatment the same. Feb. 4, the incontinence of urine and feces has ceased. Pulse continues strong, regular, and full; dyspnea has disappeared, and the edema also is entirely gone. Hydragogin was now given in 10-drop doses every four hours. Feb. 8, patient shows signs of relapse; the urine and bowel discharges again becoming involuntary. I prescribed tinct. belladonna gtt. xv, extract ergotæ one dram three times daily, with 10 drops of hydragogin and two drops of nitroglycerin every three hours. Feb. 11, conditions the same; have increased the hydragogin to 15 drops. Feb. 15, no change. Feb. 21, patient much the same. Feb. 26, died; was conscious to the last.

In remarking about this case, the relief from suffocation and the disappearance of the anasarca were, at first, as marked as in any of the other preceding cases, but, besides the cardiac changes, there was advanced Bright's disease with cirrhosis of the liver, and therefore, ere long, any remedy whatever would probably have failed.

In the remedy, hydragogin, the profession without doubt has received a great addition to the list of cardiac stimulants. It is not my province to enter again into the details of the properties of this preparation, except in so far as to state that for functional derangements, like palpitation, I know of nothing superior to it; and that it has a particular effect to increase the power of the heart's contraction in a more regular and uniform, though not in so powerful a manner as digitalis alone does. But in increasing the specific gravity of the urine in chronic Bright's disease, the power of hydragogin is much greater than that of digitalis. I have never, in fact, succeeded with any other drug as with hydragogin.

But it is in severe cases of acute diseases that we meet with the most signal illustrations of the advantage of the combined action of cardiac remedies as presented in hydragogin. To prevent heart failure until the patient can tide over the crisis, becomes frequently the anxious problem in pneumonia, in sudden prostrations in fevers, in peritonitis, when the effect of shock in causing general arterial closure is so plain as a cause of cardiac exhaustion, and in many other like conditions; and I have no doubt many practitioners will welcome some addition like this to the regulation brandy and ammonia prescription for such emergencies.

A few remarks as to the mode of administration of hydragogin will conclude this paper. The physician must be guided by the individual patient and not prescribe in each and every case the same dosage. One patient can take 15 or even 20 drops hourly, another will complain of nausea after the ingestion of the second or third dose of five drops. I generally begin with 10-drop doses every two or three hours, but if nausea, weakness, copious dejections from the bowels, or intoxication occur, I suspend the remedy for 24 hours, then begin again. The diet should consist only of milk and water while hydragogin is being given. In my experience, patients suffer no ill effects while taking hydragogin, and any annoying by-effects can certainly be avoided, if it is given diluted with four to six ounces of some reliable mineral water.

## THE USE OF NORMAL SALT SOLUTION.*

BY HARRY FRENCH THOMPSON, M.D.,
OF BUFFALO CENTER, IOWA.

In calling attention to the use of normal salt solution, I expect to add little if anything to what has already been said on the subject. It is a procedure that is being used by medical men wherever medicine is practised. Its field is a wide one, and one which becomes wider every day.

Transfusion of blood is a procedure of very ancient date, but after repeated trial, it was discarded as being unsatisfactory. The use of saline solutions was first proposed by Cantani, in 1865, who recognized in it a valuable procedure in cases of severe hemorrhage. It was later found to be of value in profound shock and collapse. Since the discovery of bacteria, and the recognition of the toxins generated by them, it has been found to be of great value in cases suffering from their evil effects. It is now being used daily, in typhoid fever with and without hemorrhage; in pneumonia; dysentery; puerperal eclampsia; peritonitis; blood poisoning and, in fact, in any and all diseased conditions associated with either severe hemorrhage or intense toxemia.

In cases of hemorrhage, it replaces the fluid lost to the tissues and refills the blood vessels, thereby giving the heart something on which to work. It stimulates the cardiac ganglia, sustains the nutrition of the heart itself, rendering it possible for the remaining blood to be propelled to the vital centers and sustain life temporarily until new blood can be formed. It raises the temperature to normal and relieves collapse.

In toxic conditions, such as eclampsia, septicemia, uremia, ptomain poisoning, etc., it excites diaphoresis and diuresis, lowers the specific gravity of the urine, increases phagocytosis, dilutes the poison circulating in the blood stream and, by a process of cell lavage, removes the toxin from the paralyzed cell, allowing it to resume its normal function. By its diaphoretic and diuretic action, it removes the generated toxins from the system.

The term "hematocatharsis" has been aptly applied to this action by Dr. E. Houel, who, in *La Revue de Therapeutique,* concludes "that the intravenous and subcutaneous use of normal salt solution is of value, not only in self-limited diseases, but also in such conditions as have already been mentioned, septicemia, etc. Dr. H. N. Moyer, speaking editorially in *Medicine* (Sept., 1901), says, "The use of normal salt solution in the treatment of toxemias will, unquestionably, play an important part in the future."

The results obtained by the use of this procedure are sometimes little short of miraculous. In cases of severe hemorrhage are the results especially marked, because of the promptness with which it acts. In this connection C. H. Anderson reports in *Medicine*, Sept., 1900, a case of typhoid fever treated by him, in which there were five separate hemorrhages, all if which were treated with normal salt solution. The patient, a corporal in the late war with Spain, was admitted to his service, at Fort Monroe, after having been sent from Chickamauga to Newport News, and from there to the general hospital. On the 26th day after admission the temperature was 106.2° F. at 5 P.M.; at 2 A.M. the following day the temperature suddenly fell to 98.5° F., leaving the patient in a state of collapse. On the administration of one-tenth of a grain of strychnine, he had a copious bloody stool. A quart of hot water with two teaspoonfuls of sodium chloride was hastily put into a fountain syringe, an ordinary eye dropper point attached, an opening made in the median basilic vein, the point introduced, the bag elevated three feet and the whole quart injected in about 20 minutes. He was wrapped in blankets, brandy administered by the mouth and ether hypodermically. He rallied nicely and at 8 o'clock the next morning he seemed to be in better condition than he had been before the hemorrhage.

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* Read before the Winnebago County Medical Society.

On the thirty-first day at 3 A.M. he had another severe hemorrhage, with conditions about as before. At this time about three pints of normal salt solution was administered as before. The patient rallied well, and was treated as before, with whisky and ether. At 9 o'clock the next morning patient was conscious and asked for something to eat. Temperature 101.4° F. Evening temperature 102.6° F. During the next four days the temperature ranged from 101.2° to 104.3° F.

On the thirty-fifth day at 8 A.M. he had another hemorrhage, and nurse reported that she thought he was dead. He was given strychnine 1-20 and an ether injection. No pulse could be felt at the wrist. He looked like a corpse. He received a quart at a temperature of 114° F., when poured from the pitcher into the bag. He did not rally as well as before and at 11 A.M. was given another quart as before. This seemed to have the desired effect.

On the thirty-ninth day he had a small hemorrhage from which he recovered with salt solution by the bowel every four hours. On the forty-seventh day he had another hemorrhage and was transfused with a quart by the same vein. From this time the patient steadily improved, and with the exception of several abscesses, due, Dr. Anderson thinks, to the fact that the water had not been filtered, made a good recovery. He was discharged Nov. 19 a thoroughly well man.

J. H. Warbasse, in the Medical News, March 2, 1901, reports using normal salt solution in delirium tremens. The patient, a man aged thirty years, had been a habitual user of alcohol. After sustaining a fall from a wagon resulting in several bruises and contusion of the side of the head and abdomen, he developed transient cerebral symptoms which later became more marked, until on the third day when the temperature rose to 104.2° F., with violent delirium. He became rapidly worse until the fifth day his skin was cyanotic. He was covered with a cold perspiration, delirium of the low muttering type. The case gave every appearance of early dissolution. He was given 1,200 c.c. of normal salt solution at a temperature of 116° F. in the median cephalic vein. Under this treatment circulation rapidly improved, delirium subsided and the patient regained consciousness in a few hours. Temperature the following day was 99.6° F. Recovery was rapid and uneventful.

Epstein, of Germany, practises the subcutaneous use of normal salt solution in acute digestive disorders and cholera infantum. He reports prompt improvement and quick cures in cases apparently hopeless. He uses 2½ drams at a time, hypodermically.

Dr. Hunter Robb, in the *Railway Surgeon*, advocated the use of normal salt solution, intra-abdominally in surgical operations. He makes a routine practice of leaving from 300 c.c. to several liters of the solution, at a temperature of 112° F. in the abdominal cavity, after all operations in which he does not use drainage. In cases in which pus has ecaped into the abdominal cavity, he uses the procedure recommended by Dr. John C. Clark, who, in *Progressive Medicine*, June, 1900, says that during four years experience he has made the practice of leaving at least one liter of normal salt solution in the peritoneal cavity after even the simplest operations. "It increases the volume of blood, lessens its specific gravity, stimulates the cardiac ganglia and accelerates the circulation. The skin, kidneys and intestines are stimulated and all the organs of the body functionate better under its influence. The number of red blood corpuscles is distinctly increased. Its special influence in abdominal operations is to prevent shock, lessen the effects of hemorrhage and decrease the virulence of the infection. Next to the Trendelenburg position, he thinks the introduction of normal salt solution is one of the greatest benefits conferred on the modern surgeon in the past five years." Submammary infusions are quite as beneficial, he thinks. They act almost as rapidly as intravenous and are devoid of some of the complications which attend the latter. He has seen marvelous stimulation in moribund cases through the procedure, which safely tided them over the critical period.

Dr. H. A. Hare, in *The Medical and Surgical Reporter*, April 17, 1897, says, "Recent French literature is teeming with descriptions of cases of toxemia treated with marked success by intravenous saline solution." "They have employed them in a great variety of cases, including hemorrhage sepsis and eclampsia. The septic cases require repeated injections, some receiving 25, of a liter each. Dr. Hare reports two cases, one of toxemia following gangrene with a subsidence of the toxic symptoms, but death from gangrene later and one of parenchymatous nephritis with dropsy who was brought into the hospital in a comatose condition, with muscular twitching. A quart injection was given followed by a copious discharge of urine and a cessation of all symptoms.

My own experience has been limited to but three cases.

*Case I.*—Man, about forty years old who, with his wife and child, ate fish and cheese, among other things, for their Sunday dinner. During the following night the child and later the wife were taken with symptoms of acute gastro-enteritis, severe vomiting and diarrhea. Some time during Monday this patient was taken with symptoms similar to those above described. The woman and child recovered promptly, with little if any medication. The man became rapidly worse. When I first saw him Wednesday at 6 P.M. in consultation with the attending physicians, he had been vomiting almost incessantly for more than 48 hours; had had numerous slimy watery passages from the bowels; temperature was elevated; pulse, rapid, weak and irregular. The usual remedies, bismuth, cocaine, cerium oxalate, etc., usually given for vomiting and diarrhea had been administered without relief. During Wednesday afternoon he had had several sinking spells, seemed to have difficulty in breathing, was faint, did not lose consciousness, but, as he described it, "things got black." He had one of these spells about 6.30 P.M. Reasoning that the cause of vomiting, etc., was an irritation of the vital centers, by the ptomaines circulating in the blood, salt solution subcutaneously was decided upon and about 8 to 10 ounces were injected under the skin in the right axillary region.

He began to feel better almost immediately. The vomiting stopped and did not recur. The sinking spells disappeared and he made an uninterrupted recovery.

*Case II.*—Woman, thirty-one years old, having a pronounced tubercular history and who had tubercle bacilli in her sputum, was taken Saturday P.M., December, 1901, with vomiting. She had in times past been treated with creosote and other antituberculous remedies, and, as she termed it, her stomach was weak. Three weeks prior to this attack she menstruated at her regular period, but contracting a cold her menses stopped. She became suddenly hoarse while reading, Wednesday evening, Dec. 11, and in 20 minutes was unable to speak above a whisper. Having had a slight cough previous to this, she was put on a simple expectorant mixture containing am. carbonate, syrup ipecac, syr. prun. virg., etc., with tr. benzoin co., to be used as a spray for her laryngitis. At about 3 P.M. Saturday she began to vomit. I saw her Sunday evening and was told that during the previous twenty-four hours she had taken bismuth subnitr. ingluvin, chloretone, cerium oxalate, all to no purpose. I gave her half a dram of chloranodyne, which seemed to relieve her for a few minutes. Without going into details, will say that during the following week I gave her, at different times, everything ever mentioned or thought of to relieve conditions of this kind and without producing any effect on the vomiting at all, unless it was that it got worse. It certainly got no better. She became weaker and more emaciated every day. As a last resort I gave her normal salt solution subcutaneously, Saturday evening, Dec. 21, in the left axillary region, with most gratifying results. The intervals between the vomiting became longer and by Tuesday, Dec. 24, she was able to retain nourishment. Her subsequent recovery was interrupted by several relapses, caused by overanxiousness; but she finally recovered fully from the vomiting and became able to eat as much and of as large a variety as any other member of the family. She was subsequently placed on vigorous tonic treatment and has had about 2¾ ounces of nuclein sol. (P. D. & Co.) subcutaneously. When last seen she weighed 132 pounds, her normal weight; was quite strong, being able to walk several blocks without tiring. It is my belief that had she persisted in the nuclein solution her complete recovery would have been only a question of time, as her tuberculous trouble was not very far advanced.

*Case III.*—Boy, aged 4½ years. On Sunday, Dec. 21, he was attacked by right-sided pneumonia, the right lung being almost wholly involved. The boy had had a slight attack about two years previous, the same lung being involved, leaving him in a weakened state from which he had never fully recovered. The case took a bad turn from the start, with temperature above 103° F. and pulse from 140 to 150 almost constantly. I first saw the case Sunday, Dec. 29, at 3 A.M. Temperature was 104° F., pulse 150, respiration 55 to 60. Bathing reduced the temperature about one degree. The parents were instructed to watch the temperature and if it got above 103° F. to use the bath. When we saw the case again in the afternoon, we were informed that he had been bathed almost constantly all day. Temperature at this time was 104.5° F.; pulse 150, respiration 50. Normal salt solution was given at 4.45 P.M. subcutaneously in the left axilla. About six ounces were given in five or ten minutes. At 5.15 the temperature was 103° F., and at 5.45, one hour after the injection, it was 102.2° F. Subsequent to the injection he had received three grains of phenacetine and $^1/_{100}$ of digitaline, per orem, which probably had some effect on the temperature for the next few hours. At 9.20 A.M. the temperature was 102.9°; 10.30, 100.4°; 11.15, 102.2°; 12, 103.2° F. Phenacetine and digitaline were given at 12.35. 1.25 Monday morning the temperature was 101.9° F. It got up to 103° F. once on Monday, most of the time at about 102° F. Tuesday it was between 101.2° F. and 101.8° F. Wednesday it rose to 102.8° F. Thursday about the same. Friday and Saturday it ranged from 100° F. to 101° F. During these few days a complication, severe meteorism arose, that had an influence on the final outcome of the case. The bowels seemed to be in a state of paresis, refusing to respond to any medication. Sunday the temperature dropped to normal, ranging Monday, from normal to 100.2°. Tuesday at 2 A.M. the temperature was 102° F.; 7.15, 101° F.; 10.10, 101.2° F. At 10.15 suddenly died, apparently from heart failure.

It seems to me that there was a marked similarity existing in these cases. All were due to the presence of a toxin in the blood. The first case comes under the head of toxins or toxalbumins described by Ziegler, when he says, "Intestinal intoxication, caused by bacterial toxine and toxalbumins occurs when animal tissues or fluids, decomposed by the action of bacteria, are taken as food; and to these intoxications belong the greater part of diseases known as meat, sausage, fish and cheese poisoning." . . . "The participation of the whole system in a local bacterial infection may be very slight or may even be entirely absent, so that the disease appears as a purely local one (tuberculosis). In other cases the locally produced toxins and toxalbumins find their way into the circulating fluids of the body and a general intoxication is produced, *i.e.*, a poisonous effect is asserted upon the nervous system and, at the same time, upon the blood and upon the heart."

The fish taken into the stomach Sunday evening failed to produce enough irritation in the gastro-intestinal tract of this man to cause its expulsion, as occurred in the wife and child. The toxins and toxalbumins were produced and, before the vomiting and diarrheas began, were circulating in the blood. We might easily say that the vomiting and diarrhea were, from the first, caused by an irritation of the centers by the toxins, as they were certainly kept up by them. The salt solution, by diluting the toxins in the blood, rendered it less irritating to the brain centers. By its diuretic and diaphoretic action it removed them from the blood, thus entirely removing the cause and leaving Nature to rebuild what had been torn down.

*Case II* is somewhat more ambiguous. Just where the toxic material was produced, whether from some tuberculous foci or from a septic condition of the stomach and bowels, it is hard to determine. The salt solution, at any rate, gave her a new lease of life. Her pulse was weak, thready and irregular, spasmodic twitching of different groups of muscles was present; her face was gray; she was unable to lift her hand from the bed; could not speak above a whisper. Subsequent to the injection her pulse became fuller and more regular, her face looked less cadaveric, and her strength was increasing greatly. It gave her a prop on which to lean, till by rectal feeding she was able to bridge over the chasm caused by the acute gastritis. The subsequent treatment has consisted of nuclein hypodermically and no medication, until she could take nourishment by the mouth. After having passed two full days without vomiting she was given gruel, to which was added, later, toast-water, grapenuts, chocolate, tea, soft toast, etc.

The apparatus used was an ordinary rubber fountain syringe to which was attached a large aspirating needle. The solution was made by adding a bottle of Parke, Davis & Co.'s concentrated saline solution to a pint of boiled well water, filtered through absorbent cotton. The apparatus can be easily carried in a grip and boiled water can always be had at short notice. No bad effects were noticed in any of the three cases above cited. In one it was a complete cure, in another a great help and in the third, I fully believe, would have resulted equally as well had not other complications set in later, complications in no way traceable to the salt solution, because of the length of time elapsing between its use and the death of the patient, and the nature of the complications.

## MEDICAL PROGRESS.

### SURGERY.

**A New Operation for Varicocele.**—The use of the electrothermic angiotribe in lieu of the employment of ligatures, in the open operation for variococele, is suggested by O. Horwitz (Phil. Med. Jour., March 28, 1903). He employed the instrument devised by Downes and claims for it the following advantages over the simple angiotribe suggested by Freeman: A more scientific, less crude and less dangerous method than that depending on violent traumatism in order to produce hemostasis is substituted, there is less danger of secondary hemorrhage, and from thrombus, the operation is not followed by pain, the instrument is not conducive to the production of orchitis, a condition commonly attending operations in the vicinity of the cord.

**Sterilization of Rubber Gloves.**—In order to make a comparative test of the efficiency of the mechanical cleansing of rubber gloves, O. Wandel and O. Höhne (Münch. med. Woch., March 3, 1903) submitted gloves cleansed in this manner to bacteriological tests. They had been infected with the ordinary pyogenic bacteria. It was found that a complete sterilization in a purely mechanical way by washing with soap and water for at least 2½ minutes, could be secured without the use of the brush. After washing they should be dried, and dusted with sterile talcum powder. The latter also permits their being drawn on without wetting. The surface of the glove should be perfectly smooth, a roughened glove is more difficult to cleanse. A knowledge of these facts affords a ready means of increasing the safety of ordinary operations. The life of the glove is also prolonged by this precedure.

**Gastro-enterostomy.**—The following is a description of this operation as usually performed by A. W. Mayo-Robson (Lancet, Feb., 28, 1903). The abdomen is opened by a four-inch incision one inch to the right of the median line, above the umbilicus. The stomach is thus exposed. The jejunum is readily found by turning the omentum and transverse colon upward and feeling for its commencement to the left side of the second lumbar vertebra. A point about 13 inches from the commencement is chosen for the anastomosis in the anterior operation, and 6 to 9 inches in the posterior operation. The loop is drawn out, emptied by gently "milking" and clamped with special forceps having long. rubber-covered blades, taking care to have the proximal end of the loop toward the cardiac end of the stomach. The union of the viscera may be made outside the abdomen, a long piece of gauze being packed about the operation area. In the anterior operation the point selected on the stomach for the union is near the pylorus, and as close as possible to the greater curvature. After the suture of the two arches is completed, a few additional stitches are introduced in the proximal end of the loop, securing it at a higher level to the stomach wall and also in the distal end, securing it at a lower level, in order to avoid kinking. In the posterior operation the great omentum and transverse colon are pulled upward exposing the under surface of the transverse mesocolon. A small slit is made in this, and enlarged with the fingers, taking care not to wound any vessel. This, in case of adhesions on the posterior wall of the stomach is sometimes simplified by passing the finger into the lesser peritoneal cavity through a thin place in the great omentum, just below the stomach. The finger thus introduced is used to press forward the transverse mesocolon, where it is free from adhesions. The posterior wall of the stomach is thus exposed, and the portion which is to be sutured is drawn through a slit in the transverse mesocolon and clamped by the long, slightly curved blades of a special pair of forceps, covered with rubber in order to avoid crushing the wall. The lateral margins of the incision in the transverse mesocolon may be stitched on each side of the stomach by a single suture in order to prevent closure, and a slit and consequent narrowing of the jejunum, as has been reported by Czerny. Union of the viscera may be effected in both anterior and posterior operations in one of three ways. Simple suture; by the decalcified bone button of the author; and by the Murphy button. The suture employed in the first two methods is practically the same. The bobbin is a splint upon which the stitches are applied. By its use an immediately patent opening of known size is secured. The bobbin is digested in 48 hours after it has accomplished its purpose. The Murphy button is generally used only when the greatest haste is desired, as the stitching in either of the first two methods may be done in from four to eight minutes by practised hands. The button is rarely, if ever, necessary. Mikulicz regularly employs it and speaks well of it, and many other surgeons prefer its use to all other methods. The method of stitching is the following: The stomach and intestine having been placed in apposition, a continuous Lembert stitch of plain celluloid thread unites the serous surfaces for a line of two inches or more. The line of this stitch is semi-oval, and joins the surface of the viscera close to the posterior portion of the anastomotic opening. Incisions are then made into both viscera in front of this suture line. A second continuous suture is now passed, uniting the posterior cut edges. This may take only the mucous membrane or all the cuts, and is of catgut. After completing the posterior half, the bobbin is introduced and the anterior semicircles of stitches are now continued. First the catgut circle is made into the cut edges, and then the celluloid circle through the cuts in precisely the same manner as the posterior line of sutures. If the bobbin is being used, the sutures are drawn firmly upon it and tied. If not, the stitches must be interrupted at one point or more in order to prevent the sutures drawing and puckering the orifices.

**Removal of an Enlarged Spleen.**—A case which presents several interesting features is reported by J. C. WEBSTER and T. TIEKEN, (Jour. Am. Med. Ass'n, April 4, 1903). The patient, a woman of thirty-eight years, presented a tumor in the right iliac region, of long duration. At a previous operation it had been pronounced an inoperable tumor of the right kidney on account of its slow increase in size since then, malignancy was not suspected. The accompanying pigmentation of the skin suggested an involvment of the suprarenal glands. The clinical symptoms suggested however, hydronephrosis of the intermittent type, associated with a calculus or with stricture or torsion of the ureter. There were several crises of pain requiring the administration of chloroform, the swelling varied in size and became smaller when urine was passed after the attacks of pain. The presence of leucocytes in the urine and the irregular elevation of temperature suggested an infected process in the supposed renal swelling. Surprise was therefore expressed when the tumor at operation was found to be a very large spleen tightly adherent in the pelvis and also to the abdominal and pelvic viscera. It was attached by a twisted pedicle which contained the enormously dilated veins. The patient made a good recovery. The spleen weighed 28 ounces, was markedly congested, presented a moderate increase in the connective tissue trabeculæ, and contained numerous mast cells. The variations in the size of the tumor were probably associated with increase and diminution of the quantity of blood in the spleen, associated with disturbances in the circulation due to torsion of the pedicle. The latter without doubt also caused the attacks of pain.

**Gastro-intestinal Perforations and Their Diagnosis.**—Following a very complete discussion of this subject, F. G. CONNELL (Jour. Am. Med. Ass'n, April 4, 1903) presents these conclusions: The previous attempts at an early and accurate diagnosis of perforation without opening the abdominal wall have not been adopted. There has been practically no improvement in diagnosing such conditions during the past century. The treatment has, however, been almost perfected when compared with the older method. The diagnosis of the perforations is one of the most important unsolved questions of abdominal surgery. There is no pathognomonic sign or group of symptoms of perforation. The only positive method of arriving at a diagnosis is to either perform an exploratory laparotomy or to await the development of a peritonitis. The latter reveals the diagnosis too late for effective treatment. Exploratory laparotomy as a routine measure is too dangerous, but the consensus of opinion is in favor of laparotomy as a choice between two evils. The injection of air or normal salt solution into the peritoneal cavity and withdrawal of the same for examination will do no harm. Such a procedure will, in many instances, reveal a perforation before any signs of peritonitis exist. The treatment of the perforation per se is simple and satisfactory. The treatment of the complicating peritonitis is multiple and unsatisfactory. The best treatment is prophylactic, *i.e.*, early diagnosis and repair of perforation before peritonitis has become established.

**Anesthetics.**—The dangers from chloroform and ether as general anesthetics, although comparatively slight, yet must be taken into consideration in every operation and patients are frequently found in which it is highly inadvisable to administer either. W. A. BRYAN (N. Y. Med. Jour., Feb. 21, 1903) has used ethyl chloride in a large number of cases for general anesthesia and has compiled statistics from several operators who have employed it in thousands of cases. He believes that it is much safer than either ether or chloroform, but not so safe as nitrous oxide. It produces anesthesia in from fifty seconds to two minutes and maintains it as long as necessary, being restricted, it seems, only by the cost of the drug. It allows the patient to regain consciousness in from two to four minutes and he may then, in a few minutes more, get up and go on his way unaided. The after-effects are very slight, if present at all. The drug is so evanescent that it cannot be kept long in the system unless constantly inhaled. The method of administration is through a closed cone that allows a spray of the liquid to run upon a piece of gauze over which all the inhaled air must pass, and containing an outlet valve so as not to permit waste by expiring through the same opening. The nitrous oxide cone of the dentists is very good. It may be said, however, that not every case is completely relaxed by it and ocular reflexes are not always destroyed.

**Frequent Association of Hernia with Hydrocele.**—In a previous paper V. REMEDI (Gazz. Osped., March 8, 1903) reported fourteen cases of hydrocele in which, during operation for that affection, a small hernial sac, the remains of a non-obliterated peritoneovaginal canal, was discovered at a point corresponding to the internal abdominal ring; though there was nothing in the history or symptoms to suggest hernia. To this number he adds eleven more cases operated upon for hydrocele, in eight of which the same condition was found. The three exceptions noted, have caused him to modify his former statement that hydrocele is always associated with non-obliteration of the peritoneovaginal process, and consequent hernia; though he still emphasizes the frequent association of the two conditions. In his opinion, this subject is of sufficient importance to merit the careful study of all surgeons, as, in the event of frequent coincidence of hydrocele with previous peritoneovaginal process being proven by repeated observations, it might be advisable, in operating for hydrocele, to extend the incision to the inguinal canal in order that the existence of such a pervious process might be discovered and obliterated, thus insuring the patient against a possible interstitial external oblique hernia.

## MEDICINE.

**Achylia Gastrica and Pernicious Anemia.**—Austin Flint was the first to think of the possible connection between grave anemias and atrophy of the stomach wall. The theory was based upon the knowledge of the importance of the gastric secretion in preparing food for assimilation and nutrition rather than upon any clinical and pathological observations. M. Einhorn (Med. Rec., Feb. 28, 1903) shows from his experience that the coexistence of the two conditions is an unusual observation. He cites three cases in which achylia gastrica existed for months or even years and was followed by a return to the normal state of secretion. Furthermore he had careful blood examinations made upon fifteen cases of achylia and found that in only four was there a notable diminution in the hemoglobin and red blood cells. In the four cases the hemoglobin ranged from 40 to 60 per cent. and there was some poikilocytosis but there were no normoblasts or megaloblasts. The clinical symptoms also did not follow the course of a pernicious anemia. The following conclusions are drawn: (1) In most cases of achylia a nearly normal blood count is found; (2) we occasionally observe the presence of gastric juice in cases of pernicious anemia, sometimes even in increased amount. If the pernicious anemia were caused by the atrophy of the mucous membrane, the achylia would be marked as soon as the symptoms of anemia appeared. If the conditions coexist, it probably means that they are both due to the same cause or that pernicious anemia finds a ready soil in achylia.

**Hypodermoclysis.**—This valuable therapeutic measure was first brought into prominence by Cantani in 1892, during the cholera epidemic. R. C. Kemp (N. Y. Med. Jour., Feb. 28, 1903) gives the results of several experiments which have been made upon the dog to demonstrate the rapidity and nature of the action of hypodermoclysis. By the use of potassium ferrocyanide combined with the saline solution it was found that in 3½ minutes the secretion of the Prussian blue was noted and became very marked in four minutes. From this time the increased flow of urine was a very prominent feature but there was no perceptible increase in the blood pressure. Profuse diuresis occurred even after the renal nerves were severed, thus showing that the action of the normal saline solution was upon the renal cells. In numerous experiments upon artificially congested kidneys it was found that the congestion was much diminished by the injection of saline solutions. In regard to the technic of the operation it is suggested that the fluid be allowed to flow slowly. so that the tissues may not be overdistended and the absorption may readily occur. The needle should be inserted slowly and obliquely, avoiding nerves and blood vessels. It is not advisable to inject into muscles as painful lumps or even abscesses may result. The best region to use for this injection is perhaps the iliolumbar, the space between the crest of the ilium and the twelfth rib. It is practically the point of least motion in the body and does not interfere with the dorsal position or cause pain through movements of the limbs or from abdominal or thoracic respiration. The ideal solution to use is a 0.6 per cent. salt solution in boiled and filtered water. One dram of the solution to one pound of body-weight is the maximum quantity that will be taken care of by the kidneys every fifteen minutes and hence in a patient weighing one hundred pounds 12½ ounces will be taken care of in the given time. The rapidity of absorption depends considerably, however, upon the condition of the circulation and with a rapid and feeble heart with poor action of the capillaries, it is a much slower method than enteroclysis. The danger of overdistention here becomes an important one. If, however, in such a case we combine with the hypodermyclosis, enteroclysis with normal solution at 120° F., the heart is immediately started up and absorption occurs more rapidly. For practical purposes the fluid may be injected once, twice or three times during twenty-four hours, depending upon the reaction and the rapidity of absorption. In an adult six ounces to a pint is indicated in uremia and allied conditions; from a pint to a quart, if there is shock or hemorrhage. In pulmonary hemorrhage or in hemorrhage from intestinal ulcers, as in typhoid hypodermoclysis, is an excellent method. An infusion or enteroclysis might stimulate the heart too vigorously and cause a recurrence of the hemorrhage. Preferably a fountain syringe should be used, but a Davidson's syringe or funnel may be employed. Usually an elevation of two to three feet is sufficient, unless a very small needle is used. An aspirating needle of moderate size is best, but an ordinary hypodermic needle can be used in emergency. Gentle peripheral massage assists absorption. As there is considerable loss of heat in passing through the tube the fluid should be at a temperature from 115° to 120° F. Indications for its use may be deduced from the effects produced by the procedure: (1) It increases the quantity of fluid in the vessels by replacing that which has been lost by hemorrhage or diarrhea. It adds fluid to the circulation and, therefore, stimulates a rapid and feeble heart as in shock; (2) it dilutes the poison and aids in the elimination of toxic products through its diuretic action, as in sepsis or in uremia; (3) it causes profuse diuresis and relieves acute renal congestion, as in uremia and oliguria; (4) it is asserted by many to have a hemostatic effect, and, hence, is of benefit in various kinds of hemorrhage for several reasons. From this it would appear that in a large number of toxemic cases due to bacterial or other causes hypodermoclysis may serve a valuable end and it undoubtedly merits a much wider field of usefulness than is accorded it at the present time.

**Filariasis.**—Owing to the rarity of this affection, post-mortem studies of the organic condition accompanying it have been but few. A distinct addition to the literature of the subject is made by L. Plasencia (Rev. de Méd. Trop., Feb., 1903). In the course of an examination of the organs of a patient who had died of typhoid fever, the author found numerous embryos of filaria in the lungs; and upon microscopical examination, the arteries showed proliferation of the endothelium; this being most pronounced in those parts in which the filaria were massed. In the subendothelial coat numerous white cells were seen; the external coat also being infiltrated with these cells. The lumen of the arteries was dilated, while that of the veins was narrowed, owing to the greater proliferation of endothelium and hyperplasia of the middle and external coats; these also being infiltrated with leucocytes. The capillaries, which were in general dilated, were the site of marked proliferation; and numerous filaria were seen in them. The pulmonary alveoli were dilated for the most part and filled with a granular substance, a few red and white cells, as well as epithelial cells, many of which were pigmented. The connective tissue forming the walls of the alveoli was in part thickened, and again destroyed. In the tissue surrounding the arterioles there were many pigmented alveolar cells. Surrounding the bronchioles and infiltrating the peribronchial tissues, which in some instances were thickened, in others, degenerated, were many migrated white cells. Proliferation of their epithelium was also observed, and evidences of congestion were seen throughout the lung. The morphological characteristics of the filaria seen in the lung were those of the *Filaria Bancrofti*. The author believes that two distinct pathological processes had gone on in the lung; the one chronic, due to the filaria, the other acute, due to the typhoid fever. In his opinion, the endo- and periarteritis were directly attributable to irritation of the endothelium by the embryos of filaria or to thrombi of which they formed a part. This brought in its train diminution or torpidity of the blood current and consequent disturbance of nutrition in the pulmonary tissue, followed by emphysema and dilation of the bronchi.

**Treatment of Fibrinous Pneumonia with Hetol.**—The good results observed from the use of cinnamic acid in pulmonary tuberculosis suggests the thought that it might also influence the primary focus of the pneumonic process. With this end in view, KRONE (Münch. med. Woch., March 3, 1903) employed injections of hetol in the early stages with excellent effect. The dose varied from one thirtieth to one sixteenth of a grain, and was given in fourteen cases. Three of these were unsuitable, being alcoholics, with cardiac degeneration. The other ten cases all showed a prompt reaction after the injection and in no case did a general infection result. The author thinks that this remedy is worthy of further trial and believes that if given early and proper dosage has undoubtedly a favorable influence on the pneumonic process. The fever is reduced, respiration becomes easier, the patient seems more comfortable, and general infection is apparently avoided.

**The Use of Compressed Air to Enhance the Action of Remedies.**—Condensed air has been extensively used to facilitate the introduction of gases into the lungs. In 1891 a paper was published which endeavored to demonstrate the possibility of enhancing and perpetuating the effects upon the cerebrospinal axis of certain stimuants and sedatives, when exhibited while the patient remained in air condensed more or less beyond that of the normal atmosphere. It was observed that men working in caissons showed at such times an increased effect from alcohol previously imbibed. The administration of ether, ammonia, and other stimulants was followed by a similar augmentation of their physiological effects. The explanation of this phenomenon probably depends on retardation of the circulation, which permits the remedy to linger beyond the ordinary in the field of action. The author of this method, J. L. CORNING (Am. Med., April 4, 1903), now brings forward some further observations. He has found that the power of compressed air to increase the effect of remedies upon the cerebrospinal axis may be heightened by the simultaneous exhibition of substances which dilate the capillaries. He describes an apparatus which has been used in 6,000 cases without any ill effects. The conclusions are summarized as follows: (1) Limitations of the method. The plan of treatment is of no use whatever in the management of the inflammatory and degenerative conditions of the cerebrospinal axis. The counterindications are, disseminated sclerosis, spastic spinal paralysis, poliomyelitis, accidents and diseases of the blood vessels, neuritis, rheumatism. (2) Legitimate sphere of action includes cerebrospinal affections of a functional character in which pain, exhaustion, insomnia, or depression are prominent features. Here the effects are striking and quite beyond those obtained in any other way. Finally, compressed air, by increasing the pressure in the renal blood vessels, gives rise to diureses. This effect, obtainable from the air alone, becomes exceedingly pronounced when a diuretic is given, even in insignificant doses.

**Treatment of Typhoid with Acetozone.**—It has been stated that this substance, while in itself biologically inert, under certain conditions underwent changes which produced a germicidal activity far greater than that of any substance known heretofore. In view of the fact that it might prove an efficient intestinal antiseptic, F. G. HARRIS (Therap. Gaz. March 15, 1903) employed it in 128 cases of typhoid fever during a recent epidemic. The most satisfactory results were obtained from solutions made by adding 12 to 15 grains of the powdered acetozone (as marketed) to the quart of hot water (120° to 130° F.). The bottle is shaken vigorously for several minutes. If allowed to stand for 15 to 30 minutes the insoluble substances settle to the bottom. The supernatant fluid is then decanted. The solution replaces water and all other liquids (except milk, which constitute almost the entire food during the persistence of fever,) and the patients are not only allowed to drink it ad libitum, but urged to do so. The solution is also given as medicine in from 4 to 6 ounce doses every four hours. Occasional small doses of sodium phosphate or magnesium sulphate are given to move the bowels and to carry the acetozone solutions as far down the intestinal canal as possible. The results from this method of treatment were very encouraging. Only eleven cases died. The average duration of the disease was shortened by at least two weeks, the temperature became more readily reduced, the stupor and delirium were very much less, tympanitis less frequent, and diarrhea was checked. The author concludes that where the treatment is begun during the first week of the illness and large amounts of the solution are given regularly and often, assisted by gentle laxatives, the temperature will return to the normal in from ten to twelve days.

**Injection of Antistreptococcic Serum as a Means of Treating Variola.**—The important rôle which streptococcus plays in variola, especially in the suppurative and the eruptive stages, has induced E. SCHOULL, a physician in the French Hospital in Tunis, to employ injections of antistreptococcic serum as a means of treating this infective disease, after the manner suggested by W. D. Lindsey a few years ago (La Sem. Méd., March 11, 1903). Schoull regularly injects 60 c.c. of the serum in three divided doses, and repeats these injections, according to the gravity of the case, after twenty-four hours, or even within the same day. In two of his patients he was obliged to give a fourth injection of 20 c.c. The punctures are made in the flank, with every antiseptic and aseptic precaution, and do not provoke either pain or any reaction. This treatment brings about a rapid improvement in all the symptoms due to the eruption, namely, the painful condition of the face and extremities, photophobia, dysphagia, hoarseness of voice, coughing and the like, together with pruritus. These symptoms continue during the grave cases, naturally, but in the majority of cases a single injection is followed by a rather sudden improvement, together with a fall in the temperature. The suppurative process does not continue, but tends to end suddenly. His records comprise 22 cases, namely, 5 hemorrhagic, 8 confluent and 9 discreet types of the disease. Only two of his patients died, making a mortality of 9 per cent. Among 34 other patients not treated with the serum, 7 died, giving a mortality of 20.5 per cent. This serotherapy presents the advantage of greater facility, when compared with phototherapy with red light. There is no reason why both might not be combined, as Schoull did in one extremely grave hemorrhagic case. It is important to notice that the serum does not always bring about cessation of the suppuration, as was noted by Schoull in three of his twenty-two individuals. This fact seems to be due to variation in the value of the serum itself, one horse having given on several different occasions serum of highly different values. This variability of the serum constitutes one of the drawbacks of the method.

**Treatment of Exophthalmic Goiter with Opium, Cocaine and Tobacco.**—Recognizing the fact that the exophthalmic goiter is practically a state of overactivity of the thyroid gland, Drs. De Mets and Godts have reasoned that the principal indication to be fulfilled in this disease consists in restoring the exaggerated function of the thyroid gland (La Sem. Méd., March 11, 1903). Thus they have enunciated the idea of combating the disease with opium, tobacco and their derivatives, which exercise a paralyzing action on nutrition and the thyroid function, according to Hertoghe. Their first attempt was carried out upon a thirty-three-year-old woman who presented all the characteristic symptoms of exophthalmic goiter. They began by giving morphine, but, since this medicine was not well borne, they suggested cocaine in progressively increasing doses, beginning with 0.005 gram and ending with 0.02 gram in 24 hours. The woman also smoked two or three cigars a day. Under the influence of this treatment the patient was almost immediately relieved, and after three months was free of tachycardia and tremors. The other morbid signs disappeared equally well (but the neck continued enlarged and the exophthalmia persisted probably because vasodilatation had become permanent. The treatment was persisted in for some time, only in gradually decreasing doses, and finally suspended. A relapse occurred a year and a half later, but was cured by the same methods, with equal promptness. Since this one case was observed, he treated two others in exactly the same manner. Both were women and were cured rapidly and are still reported well.

**Leucocytosis as a Symptom of Internal Purulent Accumulations.**—In studying the effect produced on the white blood corpuscles by pus in the system. Blossberg (Wien. klin. Woch., No. 47) arrives at the following conclusions: Leucocytosis is a phenomenon accompanying each and every suppuration in the body. In peripheral suppurations, as abscess, phlegmon the leucocytosis is rather slight; but in suppurations in the abdominal cavity, such as appendicitis, perimetritis, paranephritis, etc., the leucocytosis is quite considerable. The diminution of the pus can always be noted from the diminution of the leucocytosis. The number of the white corpuscles always tends to increase in proportion to the diffusion of the suppurative process, but diminishes as soon as the process begins to regress. The decrease of the leucocytosis is not commensurate with the rise of temperature but with the diffusion of the suppurative process outside of the primary focus. And some observers noted the fact that in the so-called pseudocrisis of pneumonia there is no abatement of the leucocytosis, although the temperature tends to decline. On the other hand, leucocytosis may indicate retention or increase in the secretion of a wound, the formation of a fresh purulent focus, or of a metastasis, as well as a complication in the suppurative process, as, for instance, an additional pneumonia or erysipelas. Leucocytosis may also aid in differential diagnosis between suppuration, as in the cecum, and mechanical occlusions in the lower part of the intestinal canal or between typhlitis and the lesions of typhoid fever in the latter of which there is an increase in the leucocytosis. As regards the absence of leucocytosis, Blossberg thinks that it may possibly be due to either of two causes: (1) The organism may be so strongly fortified against any invasion as to battle against infection without any intervention on the part of leucocytosis; or (2) on the contrary it may be early in the disease so overwhelmed with the intensity of the disease as to fail to react to leucocytosis.

**As to Prognosis in Nephritis.**—It is not known as to what amount of albumin may be considered as a basis for a favorable prognosis in nephritis, for albumin is by far not a reliable symptom (Tremescu, Thesé, Paris, 1902). A small amount of albumin may be present in grave renal lesions, and on the contrary, a large quantity of albumin may not necessarily mean a fatal prognosis (albuminuria in consequence of excessive fatigue). The same may be said about the edema. It may be met with in parenchymatous nephritis, while being absent in the interstitial form in which it appears only in consequence of cardiac insufficiency. The cardiac and vascular symptoms are of very great importance in forming an opinion about the prognosis. Even when we notice the rise in arterial tension and signs of cardiac hypertrophy we need not conclude at once that the loss is irreparable, for this condition may last even for years, a rather rare occurrence. But the gravity of the situation becomes sooner or later apparent, and signs of cardiac debility betoken clearly the approaching danger. Alterations in the retina are of bad prognostic omen; out of 100 cases of albuminuric retinitis Bull followed up 86, of which 57 died during the first year, 12 during the second, and 17 during a longer period. Phenomena of uremic intoxication are not always grave. In acute nephritis the patient may recover after delirium and even convulsions. Cephalalgia that resists treatment is a bad indication; if accompanied by vertigo, stupidity, insomnia, it indicates an approaching explosion of grave symptoms. Dyspnea and asthmatic attacks may last for years, while the Cheyne-Stokes respiration appears usually during the last weeks of life, and occasionally during the last months.

## HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

**Micrococcus of Acute Rheumatism.**—The bacterial origin of acute rheumatism has been pretty generally accepted for some time because the clinical and hygienic aspects of the disease present all the characteristics of an infective illness. It is to some extent endemic and at times exhibits a tendency to epidemic prevalence. It presents the stigmata of an attenuated septicemia. That it is due to an irritant circulating in the blood is evidenced by the concurrence of pyrexia, rapid anemia, erythemata and purpura, polyarthritis, pericarditis, endocarditis and at times pleurisy, pneumonia and nephritis. It is also probable that this irritant is of microbic origin on account of the frequency with which the onset of symptoms can be associated with an antecedent pharyngeal inflammation. E. W. A. Walker (Practitioner, Feb., 1903) has conducted a large number of experiments, taking cultures from numerous typical cases of acute rheumatism and in nearly all of them it has been possible to demonstrate the presence of a micrococcus which is the same germ which has been described by Poynton and Paine, and which is called by them a diplococcus. It is a tiny micrococcus which is usually found in ordinary films from artificial cultures, arranged in pairs and chains and it may be made to exhibit chains of remarkable length. It stains with ordinary dyes and has been grown upon various media, being both anaerobic and aerobic. It is, at present indistinguishable from an ordinary streptococcus. There does exist, however, a certain test which promises a definite result. Marmorek claims to have proven the identity of all the streptococci found in man—with the possible exception of that of scarlet fever—by the observation that they all refuse to grow in filtered culture-fluid in which a streptococcus has been previously grown and filtered out, though other organisms can flourish in such media. Two experiments with the *Micrococcus rheumaticus* showed that there was abundant growth in such inoculated fluids, and if this should prove to be a constant characteristic its separation from the ordinary streptococcus would be complete. This question of specificity is one which demands further investigation and its settlement may throw some light upon the problem of toxic specificity, the nature of the acid formed in such profusion by the micrococcus. The pathways of infection also need renewed investigation. The importance of the tonsil is recognized, but the incidence of the primary valvulitis on the left side of the heart and the mitral valve especially has aroused the suspicion that the pulmonary system may be at least one avenue of entrance.

**Improved Method of Discovering Tubercle Bacilli in the Urine.**—The following simple apparatus for the detection of the tubercle bacillus in the urine is described by O. H. FORSSELL (Deut. Zeitschr. f. Chir., 1903, B. 66, H. 3 and 4). A glass cylinder holding 1,100 c.c., 40 cm. long, 6 cm. in diameter, is drawn to a sharp cone at the lower end, which ends in a tube that is 6 cm. long and 1 cm. in diameter, which is closed by an ordinary glass stopcock. The receptacle is suspended by a simple wire loop wound about the upper extremity, which is provided with a flange for the purpose. The vessel is filled with urine and then the contents are allowed to settle for 24 hours. The stopcock is then opened, and a number of the tubes of an ordinary centrifuge are drawn off. The author uses centrifuge tubes 9.5 cm. long and 1.3 cm. in diameter, brought at the closed end into a rather acute conical point. These are then covered with a rubber cap and put into an ordinary steam turbine centrifuge. The rate of rotation is brought to 10,000 per minute, but an average of between 7,000 and 8,000 is as a rule sufficient, if maintained for fifteen or twenty minutes. As a rule the tubercle bacilli will be found in the point of the first of the two tubes, in numbers amply sufficient to establish a diagnosis. Without exception, the author cleans the apparatus after each investigation as follows: After a painstaking mechanical cleansing and washing out, he fills both the apparatus and the tubes of the centrifuge with a six-per-cent. solution of soda lye, which is allowed to remain for twenty-four hours. After this he again cleans the apparatus mechanically, and considers it fit for subsequent use. He has conducted a number of experiments, and established the fact that solutions of soda lye, beginning with 5 per cent. and higher, will convert the tubercle bacillus in twenty-four hours into an amorphous mass.

**Pathology of Nerve Cells in Typhoid and Diphtheritis.**—The effect of the toxins of typhoid and diphtheria have been studied by P. SABOLOTNOFF (C'blatt d. med. Wissensch., Feb. 28, 1903), in rabbits and guinea-pigs. From the changes which were observed in the nerve cells, it is possible to assume that the nervous system of rabbits is less sensitive to diphtheria toxins than that of guinea-pigs. The experimental trials in both species shows a marked analogy in the harmful effects produced by the toxins of both typhoid and diphtheria bacilli. In both cases a series of structural changes take place in the nerve cells, which in the acute process were of about the same character. In the chronic cases the most marked changes consisted of atrophy of the cells in the anterior horns of the spinal cord.

## EYE, EAR, NOSE AND THROAT.

**Tuberculous Laryngitis.**—This disease has always been looked upon with great dread by all physicians and is usually considered as meaning an early fatal termination of the case. J. C. SHARP (N. Y. Med. Jour., Feb. 7, 1903) believes that it never occurs as a primary lesion, being always secondary to pulmonary tuberculosis. Therefore, the vigorous local treatment which was so much in vogue till recently has undoubtedly been the cause of much useless suffering by patients, and it is well that such local treatment has now been pretty generally discarded. He, furthermore, believes that not all cases are hopeless. He divides them into two classes, upon which he bases his prognosis: (1) Cases where the ulceration is confined to the true cords, ventricular bands and interarytenoid commissure, without infiltration of the surrounding tissues; (2) cases with ulceration of the arytenoids, aryepiglottic fold, true cords and ventricular bands with infiltration or infiltration without ulceration. In patients with ulceration without infiltration and with a pulmonary lesion not far advanced, particularly where there is little digestive disturbance and the patient can tolerate large doses of creosote, the chance of recovery is good, even on Manhattan Island and a favorable prognosis can be given. In cases with infiltration a change in climate is necessary and if to the infiltration ulceration is added the patient will die within from three to six months and it is folly to send him away from home to die. These patients never improve on creosote and, as it is very irritating to their painful larynx, it had better be omitted. The chief plan of treatment should be to make the patient comfortable. The class of cases in which the commissure, bands and true cords are infiltrated without ulceration, will do well on large doses of creosote and if the drug is well borne, a large percentage will get well, if they are made to live an out-of-door life and follow the directions which should be given to such patients. The liquid beechwood creosote is the preferable preparation and is recommended in doses gradually increased up to forty or fifty drops three times a day. Cod-liver oil can be given with benefit at the same time. Numerous cases of recovery are reported under this line of treatment.

**Diagnosis of Foreign Bodies upon the Surface of the Eye.**—The effect of fluorescine upon abrasions of the conjunctiva is utilized by J. S. FERNANDEZ (Cron. Méd.—Quir. de la Habana, Feb., 1903), to bring more clearly into view foreign bodies upon the surface of the eye. This substance infiltrates the tissues at any point at which there is a break in the epithelium and imparts to such an area, a bright green color. As the tissues immediately surrounding a foreign body are more or less injured, they take on a vivid green hue when fluorescine is instilled into the eye, thus clearly outlining the foreign body. Fernandez has also found the instillation of fluorescine a valuable aid in the differential diagnosis between old and recent opacities of the cornea; the former not taking on the characteristic green color when treated with this substance, as do the latter; and loss of epithelium from ulcers or any cause is clearly indicated by its use. When the galvano-cautery is to be applied for infectious ulcer or instrumental work of any kind is to be performed, its instillation prior to operation serves to define the limits of the diseased tissue to be operated upon.

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## SATURDAY, APRIL 25, 1903.

### IRON IN THERAPEUTICS.

NOTHING in the whole history of therapeutics is more interesting or more instructive than the vicissitudes of the theories on which iron has been administered at various times. For almost as long as the memory of man runneth it has been recognized that the exhibition of iron in certain forms was useful in the treatment of anemic conditions. Originally this was considered to be due to the fact that iron by its very nature gave strength and that somehow the substance of the metal was transmuted into vigor for the affected individual. When, long ago, the countryman dissolved shingle nails or some other form of iron in vinegar, or made what the Germans call Rostwasser by allowing iron to collect in water, and gave the draught to his anemic daughters, it was with no idea that the acetate of iron or oxide of iron might in some way affect the chemism of the body, but that the physical qualities of the metal somehow were absorbed and transformed into health-giving, bracing properties for the patient.

When it was discovered that the principal element in the coloring matter of the blood, hemoglobin, was an iron compound and that the transference of oxygen from the outer air to the tissues was accomplished mainly by means of the unstable compounds that oxygen forms with this iron-containing substance, then it was concluded at once, and apparently on good grounds, that the reason why iron was useful in anemia was that the iron compound administered by the mouth was absorbed directly as food would be from the intestines and helped to make up for the deficiency of iron which exists in anemic blood. For a considerable time this theory held its ground and a definite advance in scientific medicine seemed to have been made, beyond which it would be unnecessary to seek for further reasons. The basis of iron therapy, in a word, appeared to be settled for all time.

The advances in physiological chemistry, however, showed that meat and most of the vegetables which men consume contain an abundance of organic iron, certainly much more than would be necessary to supply the place of the comparatively small amount of iron whose absence from the blood is the index of the anemia and the condition on which apparently the weakness is dependent. Besides, Sir Andrew Clarke had insisted very much that in addition to iron therapy the most important element in the treatment of anemic conditions was to put an end to the absorption of toxic materials from the intestines by preventing constipation. Evidently the condition of the bowels had something to do with the presence of anemia, especially in young people, and accordingly the theory of iron therapy was modified and it was said that the iron ingested was not directly absorbed but served to prevent the formation of certain toxic compounds, especially substances related to hydrogen sulphide, which occurred in the intestines during periods of constipation. There are those who still consider that this is the main reason why iron acts favorably in anemic cases.

In the meantime a number of observers in various countries have been finding some very interesting details of therapeutics as regards various metallic substances more or less closely related to one another. It was shown for instance by German and French observers that manganese exerted something of the same influence as iron when administered in corresponding doses to anemic patients and that this substance made a useful adjunct to iron in such cases. As manganese has normally no place in the tissues at all, this came as a distinct surprise to the holders particularly of the original theory of iron therapy. Other observers showed that almost any of the so-called heavy metals would prove as effectual as iron for the treatment and relief of anemic conditions. Sir William Broadbent, over a year ago, in his article in the Von Leyden Festschrift, stated that copper or cobalt or nickel might be used in small doses to replace iron in the therapy of anemia with excellent results. Employed in dispensary cases with reasonable care as regards diet and exercise any of these metals gave the tonic stimulus that was supposed to be the specific effect of iron a few years ago and some of them even succeeded in cases in which iron had apparently failed. Here in America it had been shown by Taylor, some years before, that mercury in small doses might act well as a tonic and that if carefully administered it would cause an increase rather than a decrease in the number of red blood corpuscles and in the hemoglobin value of their contents. This was a startling addition to our clinical knowledge of the so-called iron therapy. We were really in the presence of a metallotherapy.

It has taken a long while for pathologists to learn anything definite about the pathology of the red blood corpuscles. The white blood corpuscle has been described as existing in a number of pathological conditions while the more plentiful red cells have been less fruitful fields for discovery. Recently it has been found that there is a characteristic degeneration of the red blood corpuscles that takes place as the result of certain toxemias. This degeneration occurs typically very early in lead and arsenic and other metallic poisoning. Curiously enough, however, a corresponding degeneration has been found to occur in connection with the administration of an excess of iron. This accounts for the unpleasant results that follow the administration of iron in plethoric conditions better than any previous etiological suggestion. It would seem then that iron acts as a stimulus to the vitality of the red blood corpuscles and that this stimulus may easily be too great and set up degenerative processes.

The whole subject of iron therapy is a lesson in the attitude of mind that a physician should assume with regard to therapeutic questions. While there has been no doubt that clinically iron was beneficial in anemic conditions the various theories to account for it have up to date all been without substantiation and our use of it has depended largely on empirical reasons. Empirical advances in therapeutics then, the practitioner must be ready to accept, even though the reason for them is not always evident. On the other hand, pretty theories must not be allowed to play too important a rôle in persuading the practitioner as to the possible good that may result from the administration of drugs whose benefit may be due to entirely different reasons from those alleged. In a word, the mental attitude must be one of ready receptivity and yet of thoroughgoing conservatism.

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### DEXTRINE IN PLASTER OF PARIS.

Although no less a surgeon than Dupuytren is credited with having first conceived the idea of utilizing this material as a stiffener for his surgical dressings, of recent years no mention and no use appear to have been made of it. This is an excellent example of the perishing of a most useful method, and it will be of interest and value for the members of the profession to know that recent experiments have been made with it which show that the old French writer was by no means incorrect in his statements.

If incorporated in a ten per cent. proportion by volume with the plaster of Paris and carefully rubbed up with it, the crinoline bandages made from this mixture have properties distinctive to themselves. It is very convenient to apply such dressings as a shell over the plain plaster of Paris dressings. These can be made very much lighter than usual, because the dextrine bandages reinforce the plaster of Paris to a very remarkable degree. This dressing is particularly useful in making ambulatory casts, both because they may be made much lighter than in any other way, and because of their greater durability.

Another very important use for this technic is in making the plaster of Paris jackets for spondylitis. It has been claimed that dextrine would render the cast impermeable, but such is not the case. The patients find that any lack of porosity which may be present is more than made up for by the greater lightness, which is possible because of the greater strength. It is as a rule sufficient to make the dextrine shell one-thickness of crinoline. This should however be doubled or trebled on the sole of the foot and just above the ankle, namely upon all parts where strain occurs.

It is desirable to allow the plaster of Paris portion of the cast to dry reasonably well before applying the dextrine bandages, because when the dextrine is heated, which may be done to hasten the setting, it appears to interfere with the rapid drying of the plaster beneath it. For the purpose of heating the cast, an automatic plumber's gasoline stove is very serviceable, the type without the air pump being preferable because of its greater freedom from danger. This throws a very hot flame and should never be used if the patient be unconscious, but there need be no fear of burning any one who is awake. Casts made with this shell of ten per cent. dextrine and dried in this way can be walked upon in as short a time as the ordinary plaster of Paris cast. It is conservative to say that they will last at least one-third longer; they are about one-third lighter and their porosity is not sufficiently decreased to give the patient discomfort.

## PERCENTAGE PHYSIOLOGY.

Attention has recently been called by a committee of investigation in Pennsylvania to the method and manner in which physiology is taught in the public schools of that State. It has been found that the text-books used are nearly all written from the viewpoint of the moralist rather than from that of the scientist, and hence that the teaching, while not necessarily pernicious to the general mental training of children, is bigoted and at times absolutely false. The desire to impress upon the youth of this age an abiding and useful lesson on the subjects of alcohol and tobacco, as affecting the growing body, has led to an extreme in which both are declared to be exceedingly dangerous to health, and almost useless as remedial agents.

The force of habit as applied to the general moral sensorium is too well known to the educated classes to admit of comment; but with this distinctly in view, and having ever before us the vile and oftentimes degrading results, brought about by the indiscriminate use of stimulants and narcotics, we can scarcely fail to condemn the method of teaching now in vogue. The purpose of all scientific training is the perception and recognition of truth in its broad and more general sense, irrespective of any attempt to influence one way or another those minds which can think for themselves, and hence are capable of drawing their own conclusions. As President Wilson of Princeton says: "Characters are by-products, and the minute you set yourselves to produce them, you make prigs of yourselves and render yourselves useless."

It is hardly likely that any ordinary boy is going to be deterred from smoking because his text-book tells him that tobacco-heart is sure to end his existence at an early age,—instead, he will probably be stimulated to "try it and see."

## ECHOES AND NEWS.

### NEW YORK.

**Reception of Dr. Mikulicz.**—Professor von Mikulicz of Breslau was tendered a reception by Dr. F. Kammerer of New York last Thursday, April 16. A large gathering of eminent men was present to greet this well-known surgeon. Professor Mikulicz has conducted a number of clinics here in the city, and on May 11 will be present at a meeting of the Academy of Surgery in Philadelphia.

**Officers of New York County Medical Association.**—The annual meeting of the New York County Medical Association met last Monday evening, and the following officers were elected: President, Alexander Lambert; First Vice-President, Francis J. Quinlan; Second Vice-President, S. Busby Allen; Secretary, Ogden C. Ludlow; Corresponding Secretary, John J. Nutt; Treasurer, Charles E. Denison; member of Executive Committee for three years, Frederick P. Hammond; member of Nominating Committee, Fifth District Branch, Parker Syms.

**T. Gaillard Thomas.**—At the meeting of the New York Obstetrical Society, held April 14, 1903, the following resolution upon the death of Dr. T. Gaillard Thomas, presented by the committee appointed at the last monthly meeting, was adopted:

"In paying its tribute of respect to the memory of T. Gaillard Thomas, the New York Obstetrical Society takes pride in the thought that he was one of the founders, several times its President, and for many years one of its most active and honored members. It is a pleasure to recall the various incidents and upward steps in his career, how he came to New York a poor young practitioner without friends, and with hardly an acquaintance, and how, by sheer ability he soon made himself felt, and left the impress of his personality wherever it was his destiny to labor. In his day he was a leading authority on all gynecological and obstetrical subjects. As an operator, he was facile princeps. He was not only theoretically the master, but his technic was unexcelled. Who, that listened to his lectures, was not impressed with the forcefulness of his style, and the breadth of his erudition. He has passed from among us, having reached the fore-front of professional eminence, satisfied and content, and rich in the rewards and honors of his career. It is proposed that these words be entered upon our minutes, and a copy be sent to the family and the medical journals." (Signed) Clement Cleveland, J. E. Janvrin, George Tucker Harrison.

**Manhattan Dermatological Society.**—Regular meeting held April 3, at the residence of Dr. E. L. Cocks. Dr. L. Weiss, presiding:

Dr. Gottheil presented a boy of eight years, with an eruption of flat, scaly papules, confined chiefly to extensor surfaces; new lesions appear in crops and disappearing leave marked pigmentation. The skin has never been entirely free; face remained clear, however; considerable itching, weeping and crust formation is present. Dr. Gottheil called it a chronic papular eczema of unusual manifestations. Dr. Oberndorfer was inclined to call it lichen scrofulosum. Dr. Cocks agreed with Dr. Gottheil. Dr. Whitehouse said the pigmentation was unusual for an eczematous condition, but would nevertheless call it chronic neurotic eczema. Dr. Bleiman stated he saw some resemblance to prurigo, although not typical; some features were lacking. The highly inflammatory nature of the eruption would exclude lichen scrofulosum. Dr. Pisko thought it a case of mild prurigo. Dr. Abrahams thought the picture was strongly in favor of prurigo, although the general aspect of lesions made him coincide with Dr. Gottheil. Dr. Sobel was inclined to the diagnosis of chronic eczema; the symmetrical involvement and postauricular involvement favored such a diagnosis.

Dr. L. Weiss showed a man of thirty-two years, with a general pinkish macular eruption on body, present about five weeks and in its initial stage attended by slight languor and malaise. Presented as a case of pityriasis rosæ. In speaking on the etiology of this condition he said that recent investigators could throw no light as to its mycotic origin, since positive evidence of the latter was still wanting. He regards pityriasis rosæ distinct from herpes maculosus et squamosus; the former probably of reflex internal origin, the latter a mycotic affection and infection from without. Dr. Sobel stated that he studied many slides and cultures, with negative results.

The following 14 cases were presented, but no general discussion followed, owing to the lateness of the hour.

By Dr. Pisko, a young man with varicella-like papules scattered generally all over the body; present about seven weeks. The lesions dry up and leave deep excavated and depressed spots. The general opinion expressed that it was a case of acne necrotica. A second case presented by Dr. Pisko was one of psoriasis guttata; shown to illustrate an initial attack and to show how the condition looked before treatment. Dr. E. L. Cocks presented a man with Addison's disease, gastro-intestinal derangements; tachycardia and bronzing of the skin were marked symptoms. Under suprarenal extract to 73 grains per day, Dr. Ochs (who likewise observed the case) and Dr. Cocks both claim that the patient is improving somewhat. A second case by Dr. Cocks of tinea maculosus et circinatus. The lesions were general on body and extremities and showed raised margins with pale, healing centers, with slight scaling. Dr. I. P. Oberndorfer showed an elderly male, who two weeks ago presented a highly glazed, slightly indurated erosion on right side of nose, with small nodules around its periphery. It strongly resembled a superficial epithelioma; two weeks' treatment with 5-per-cent pyrogallic ointment, resulted in a complete cure; although some epitheliomata get well under this line of treatment, Dr. Oberndorfer is somewhat skeptical as to his former diagnosis. A second case by Dr. Oberndorfer a male, of thirty-five years, with an eruption of minute pale pink papules slightly desquamating, on body, upper and lower limbs; in the same condition for the past two weeks. He believes it resembles Kaposi's description of lichen acuminatus. Dr. A. Bleiman showed a male, about thirty-five years old, with an eruption on body and limbs, but especially marked along outer aspects of thighs and lower arms; it consisted of minute reddish papules, dry and slight scaling, closely grouped and gradually fading away into normal skin tissue; he called it a lichen pilaris.

Dr. W. S. Gottheil presented the following cases: Case of erythema multiform, chronic folliculitis of beard of eight years' duration; the left side of the face showed healing with atrophy and loss of hair; the right side represented the more acute stage of pustulation and induration. Case of chronic indurated eczema of the nates; eight years' standing and uninfluenced by any kind of treatment; recently results were obtained by the use of pure carbolic acid applied to the areas. A case of lupus on lower right limb. About one year ago a lupus patch was excised from the left cheek; at that time the patch on limb was also present, its appearance has changed considerably since then, so much so that Dr. Gottheil hesitates in calling it lupus now.

Some of the members regarded it as a lupus, undergoing resolution; Dr. L. Weiss stated its appearance now suggested to him the condition of an atrophic lichen planus; a specimen of an indurated chancre excised in toto, many months ago; the patient, still under observation, as yet shows no secondary symptoms.

Dr. B. F. Ochs presented a case of lichen planus ruber; in order to prove his contention that the mother lesions of lichen could be produced by irritation upon a healthy area of skin in a patient affected with lichen, he made a pin scratch in the shape of a letter N upon the lower left arm. At this site a row of lichen papules developed ten days after the injury to the healthy skin. A second case by Dr. Ochs of lupus vulgaris; of interest was the unusual location on the left buttock; no other lesion present.

## PHILADELPHIA.

**Dinner to Dr. Anders.**—Dr. James M. Anders, who is soon to be married, was given a dinner at the Hotel Belleview Saturday evening, April 18, by his colleagues on the staff of the Medico-Chirurgical Hospital. Dr. John V. Shoemaker acted as toastmaster and the fourteen hosts responded in words befitting the occasion.

**Department of Health and Charities.**—It is rumored that Dr. John V. Shoemaker will be appointed the first director of the Department of Health and Charities, which was recently created by consolidating the Department of Charities and Correction and the Bureau of Health. Dr. Shoemaker has served as President of Board of Directors of the Department of Charities and Correction, and was largely instrumental in bringing about the consolidation.

**Ray Bill Fails to Pass the Senate.**—The Ray Bill, designed to raise the standard of education among physicians in Pennsylvania, has been shelved by the State Senate after passing the House by a vote of 126 to 13. It is claimed that some of the lower standard medical schools, through their political influence, succeeded in killing the bill.

**Roof Garden Opened by Rush Hospital.**—The Rush Hospital for Consumption and allied diseases has opened a pavilion on the roof of the institution. This provides ten more beds for the overcrowded hospital, and is intended for patients in the incipient stages of the disease. The capacity of the institution is now 45 patients, the country branch at Malvern accommodating 18 more.

**Complimentary Dinner to Dr. Flexner.**—The colleagues of Dr. Simon Flexner, on the staff of the University of Pennsylvania, and a number of professional friends to the number of fifty, gave him a complimentary dinner at the University Club April 16. Dr. S. Weir Mitchell presided and responded to the toast "The Scientific Spirit in Medicine." Toasts were also responded to by Drs. A. C. Abbott, H. A. Hare, W. M. L. Coplin, and J. G. Clark.

## CHICAGO.

**Urgent Needs of the Children's Hospital.**—Sharp criticism of the expense of conducting Chicago's charities and equally severe condemnation of the City's inadequate facilities for caring for sick children were meted out with unsparing hand by Drs.

John B. Murphy and Isaac A. Abt at a recent conference of the Children's Hospital Society. It is estimated that from 30 to 64 per cent. of the money contributed to Chicago organizations for charitable purposes is spent upon salaries and expenses. One well-known institution which receives $300,000 a year, spends $119,000 of this sum in salaries. Another, which has contributions amounting to $116,000, spends $44,000 a year for salaries and administration expenses. The sole institution which appears to be an exception to this rule is the United Hebrew Charities. This organization received last year collections amounting to $156,000, and spent but $4,241 of this amount in salaries and expenses. Dr. Murphy's criticism was uttered in an appeal for funds, which he made on behalf of the Children's Hospital Society. The speaker stated that the only expenses of this institution were a stenographer's salary, and $16 per month for room rent. He said that under an economical administration the cost of giving a sick child proper medical treatment could be reduced to $3.50 a week.

**Investigating Committee Report.**—In reporting for the Investigating Committee of the Children's Hospital Society, Dr. Isaac A. Abt announced that the nine physicians composing this body had spent two months in looking into local facilities for the care of sick children, and had found out that no children's ward or hospital in the city had been constructed with the best knowledge of hospital sanitation and construction. Out of 27 institutions examined, but 18 maintained children's wards. The majority of these are overcrowded, containing insufficient air space, and being deficient in ventilation. Nothing in the investigation was more striking than the lack of provision for contagious diseases, both those which arise inside the hospitals and those originating outside their walls. A hospital for the exclusive care of infants was advocated, as well as the appointment of an expert milk commission, which shall have power to furnish certificates as to the quality of the milk sold by dairymen who complied with its sanitary requirements. Rev. Dr. Gunsaulus announced the endowment of three hospital beds for children by the congregation of the Central Church, and said that in his opinion this cause was more worthy of support than the Thomas Orchestra Fund.

## GENERAL.

**An Interesting Medicolegal Case.**—The Western Union Telegraph Company is being sued for $2,000 damages by Dr. Howard A. Kelly in the Superior Court for alleged negligence in failing to transmit two telegrams to Dr. Kelly on the night of October 12, 1902. On the night in question, the declaration states, Dr. Kelly was on the Federal Express, a through train, which left Boston at 7 o'clock for Baltimore. One of the telegrams was filed in Baltimore at 8 P.M. and was directed to Dr. Kelly at New Haven, Conn. The other telegram was filed in Baltimore at 11.57 P.M. and was directed to Dr. Kelly at Trenton, N. J. The telegrams directed Dr. Kelly to take the morning train the next day for Cambridge, Md., for an important operation. Through the gross negligence and carelessness of the telegraph company, it is alleged, the messages were not telegraphed, and Dr. Kelly was thereby prevented from performing the operation.

**Fourth Pan-American Medical Congress.**—At a meeting of the International Executive Committee of the Pan-American Medical Congress, held April 1, 1903, it was decided to accept the proposal of the Argentine Republic to hold the Fourth Pan-American Medical Congress in Buenos Aires in 1905, instead of 1903, as had been announced in their invitation of February, 1901. This was considered by the Committee much more advantageous for the meeting, as it has long since been realized that it would have been impossible to have had a good representation of the delegates from this and other countries, had the convention been held there in June of this year. The meeting of the American Medical Association in New Orleans and of the Congress of Physicians and Surgeons in Washington would have prevented a number of physicians of this country from attending; while the meeting of the International Medical Congress in Madrid would have probably attracted many from the Spanish-American countries who would otherwise have been disposed to have taken an active interest in it.

**Salt in Pathology.**—We have just passed through an epidemic of salt pathology theories, and now a new one turns up, this time a propos of cancer. Capt. Rost of the Military Medical Service, who has been investigating malignant cancers bacteriologically at the Rangoon Hospital for three years, announces what is believed to be an important discovery. He has found in both carcinomata and sarcomata cancers distinct germs of saccharomycetes, which can only develop when the natural chlorine in the tissues falls below the normal quantity. Following this clue, Capt. Rost devised a treatment to reenforce the chlorine by special diet, enabling large quantities of common salt, which contains chlorine, to be absorbed. He has experimented with eight patients. One was completely cured and the condition of the others was improved. He will continue his experiments.

**The West Virginia State Medical Association.**—This Association will hold its thirty-sixth annual meeting at Charleston, W. Va., May 26, 27 and 28, 1903. The scientific, business, and social programs will be of unusual interest and attraction this year. A representative of the American Medical Association will be present. It is hoped that every member who can at all do so will attend this meeting. Titles of papers, to appear on the program, must be in the hands of the Secretary before May 11, 1903.

**American Academy of Medicine.**—The twenty-eighth annual session of the American Academy of Medicine will be held at the Arlington, Washington, D. C., on Monday and Tuesday, May 11 and 12, 1903. The following papers have been promised: The Home Life and Education of Our Girls as Affecting Their Future Health, by James H. McBride, Pasadena, California. Symposium on The Teaching of Hygiene in the Public Schools. The Teaching of Personal Hygiene, by Walter L. Pyle, Phila., Pa.; Hygiene vs. Anatomy and Physiology, by Geo. G. Groff, Bucknell Univ., Lewisburgh, Pa.; The Teaching of Physiological Breathing, by G. Hudson-Makuen, Phila., Pa.; Hygiene as Related to the Causes and Prevention of Tuberculosis, by A. Mansfield Holmes, Denver, Colo.; The Teaching of School Hygiene, by Helen C. Putnam, Providence, R. I.; The Michigan Method of Teaching Hygiene, by V. C. Vaughan, Univ. of Michigan; The Training of Teachers, by Thos. D. Wood, New York city. Address of President. "Muck-Rake" Methods in Medical Practice, by Charles McIntire, Easton, Pa.; Social Dangers of Gonorrhea, Especially in Relation with Marriage, by Prince A. Morrow, New York city. Symposium on Required and Elective Studies in the Medical Course. Anatomy, by Frederic H. Gerrish, Portland, Me.; Pathology, by

Wm. H. Welch, Baltimore, Md.; Internal Medicine, by S. G. Bonney, Denver, Colo.; How Much Knowledge of Special Branches Should be Required for Graduation, by L. Duncan Bulkley, New York city; A Theory and a Condition, as Illustrated by Ophthalmology, by Edward Jackson, Denver, Colo. General Discussion. The Influence of the Doctor on the Birth Rate, by S. G. Curtin, Phila., Pa.

**American Urological Association.** —Amphitheater of the New Orleans Polyclinic, May 8 and 9, 1903. President's address: The Present Status of Urology in the United States, by Ramón Guiteras, New York. Exhibition of patients; demonstration of specimens, instruments and appliances. Some Aspects of Urinary Diseases from a General Practitioner's Point of View, by William H. Thomson, New York; Tuberculosis of the Kidney, by Robt. T. Morris, New York; The Conservative Treatment of Some Surgical Diseases of the Renal Pelvis and the Ureter by the Uretercystoscope, by F. Kreissl, Chicago; Cysts of the Kidney, by A. H. Goelet, New York; Remarks on Some Cases of Renal Surgery, by Charles G. Cumston, Boston; Diagnosis of Renal Calculus, by Alex. B. Johnson, New York; The Effect of Stricture on the Upper Urinary Tract, by Winfield Ayres, New York; Pro and Con Nephropexy, by A. E. Gallant, New York; The Diagnosis of Tuberculosis of the Kidney and Ureter, by J. Wesley Bovée, Washington; Simultaneous Catheterization of Both Ureters; Its Advantages. Technic with instrument, by Simon L. Elsner, Rochester; The Value of Rectal and Colon Irrigation in Nephritis, by Robert Coleman Kemp, New York; The Operative Treatment of Chronic Nephritis from the Viewpoint of the General Practitioner, by L. C. Begg, New York; The Comparative Value of Methods of Determining the Working of the Kidneys Prior to the Operation, by A. S. Boyd, New York; The Diagnosis of Impaired Functional Conditions of the Kidney, by John von Glahn, New York; The Present Status of Litholopaxy, by Wm. K. Otis, New York; Choice of Operations in Vesical Calculus in the Female, with Description of Technic, by E. H. Grandin, New York; Cystoscopy in the Service of Gynecology, by G. Kolischer, Chicago; Sacculated Bladder, by Joseph B. Bissell, New York; The Result of the Local Treatment of Ulcers of the Bladder, by Louis E. Schmidt, Chicago; Retention of Urine, by Ferd. C. Valentine and T. M. Townsend, New York; Results Obtained by Galvano-caustic Prostatomy for the Treatment of Prostatic Hypertrophy, by Willy Meyer, New York; The Effect of Prostatic Diseases on the Urinary Tract, by John Van der Poel, New York; Perineal Excochleation of Hypertrophied Prostate without Opening Urethra or Bladder, Unsatisfactory Result, by Joseph Rilus Eastman, Indianapolis; Report of a Case of Sarcoma of the Prostate, Operated by Enucleation; Recovery without Recurrence. Death four years afterwards from other causes, by Granville MacGowan, Los Angeles; The Frequency of Prostatic Involvement in So-called Mild Urethritis, by Walter B. Brouner, New York; The Relation of Chronic Prostatitis to Urethritis and Cystitis, by L. W. Bremmerman, New York; Urethral Tuberculosis, by Arthur L. Chute, Boston; The Urethroscopic Treatment of Posterior Urethritis, by H. F. Nordemann, New York; The Clinical Value of Urinary Analysis, by Louis Heitzmann, New York; An Improved Method for the Determining of Indoxyl-Potassicum Sulphate in Urine, by Heinrich Stern and Gustave M. Meyer, New York; Chorda Venerea, by Guy S. Peterkin, Seattle; Reflex Skin Eruptions from Urethral Disturbances, by August Ravogli, Cincinnati; Herpes Due to Urinary Derangements, by Ferd. C. Walsh, Washington, D. C.; Are We Becoming More Conservative in the Treatment of Urethral Inflammation? by A. L. Wolbarst, New York; A Contribution to the Prophylaxis of Venereal Diseases, by G. Morgan Muren, Brooklyn; The Value of Climate in Urinary Disturbances, by W. H. Prioleau, Asheville.

**American Neurological Association.**—The program of this Society, holding its next annual meeting at Washington, May 12, 13, 14, is as follows: Tuesday, May 12, presidential address, Dr. J. W. Putnam, of Buffalo. Other papers are: The Sign of the Orbicularis in Peripheral Facial Paralysis, by Dr. George W. Jacoby, of New York; Contribution to the Study of the Achilles Reflex and the Front Tap, by Dr. George L. Walton and Dr. W. E. Paul, of Boston; The Reflexes in Long-distance Runners, by Dr. Philip C. Knapp and Dr. J. J. Thomas, of Boston; Report of a Case of Aneurism of the Descending Thoracic Aorta Mistaken for Pott's Disease, with Autopsy, by Dr. Charles W. Burr, of Philadelphia; Polioencephalomyelitis and Allied Conditions, by Dr. Edward W. Taylor, of Boston; A Case of Acute Degeneration of the Spinal Cord with an Ascending Type of Paralysis, by Dr. D. J. McCarthy and Dr. Wm. E. Hughes, of Philadelphia; Two Cases of Multiple Tumors of the Brain and Spinal Cord, and One Case of Primary Sarcoma of the Spinal Cord, by Dr. William G. Spiller and Dr. William F. Hendrickson, of Philadelphia; Three Cases of Spinal Cord Tumor Treated by Operation, by Dr. J. J. Putnam and Dr. J. W. Elliot, of Boston; Two Cases of Brain Tumor, with Operations. Recovery and Ultimate Death, by Dr. C. Eugene Riggs, of St. Paul; A Cerebellar Tumor; Operation; Recovery, by Dr. Frank R. Fry, of St. Louis; Central Neurofibromatosis: A Contribution to the Study of Tumors of the Medullo-Ponto-Cerebellar Angle, by Dr. Joseph Fraenkel and Dr. James R. Hunt, of New York; A Case of Progressively Developing Hemiplegia, Later Becoming Triplegia, Resulting from Degeneration of the Pyramidal Tracts, by Dr. Charles K. Mills and Dr. William G. Spiller, of Philadelphia; Chronic Progressive Hemiplegia, by Dr. Hugh T. Patrick, of Chicago; A Case of Progressively Developing Left Hemiplegia, Followed by Progressively Developing Right Hemiplegia, with Exhibition of the Brain, by Dr. Graeme M. Hammond, of New York; Flaccid Paralysis Following Cerebrospinal Meningitis, by Dr. William N. Bullard, of Boston; Cases of Alexia, by Dr. Philip Zenner, of Cincinnati; Two Cases of Hysteria Presenting Marked Symptoms of Insanity, by Dr. Theodore Diller, of Pittsburg; The Principles Underlying Practice in Mental Therapeutics and Legal Regulation of Its Practice, by Dr. Richard Dewey, of Wauwatosa; The Neurasthenic Neuralgias, by Dr. Frank K. Hallock, of Cromwell; The Intracranial Complications of Middle-ear Suppuration, by Dr. Wm. M. Leszynsky, of New York; Modern Theories of the Emotions and Their Bearing on Mental Derangements, by Dr. Henry Upson, of Cleveland; Paralysis Agitans Complicated with Delusional Mania, by Dr. John Punton, of Kansas City; Atypical (One-sided) General Paralysis, by Dr. Adolf Meyer, of New York; Report of Two Cases of General Paralysis with Focal Symptoms; Autopsy in Both Showing Hemiatrophy of the Brain, by Dr. A. Hoch, of Waverley; The Facial Reflexes, by Dr. Charles L. Dana, of New York; The Importance of the Plasma Cell in the Cortical Vessels in Dementia Paralytica, by Dr. Stewart Paton, of Baltimore; A Case of Cerebral Tumor in which Muscular Atrophy and Astereognosis were Prominent Symptoms, by Dr. Morton Prince, of Boston; Bony Sensibility, by Dr. Philip C. Knapp, of Boston; Intense Double Optic Neuritis Without Assignable Cause, by Dr. Howell T. Pershing, of Denver; Remarks on Astereognosis, by Dr. William N. Bullard, of Boston; The Importance of the Nerve Centers in Pulmonary Consumption, by Dr. Thomas J. Mays, of Philadelphia; The Limits of Non-physical Therapy, by Dr. Smith Baker, of Utica; Demonstration of Certain Points Regarding the Development of the Neuro-fibrils in the Nerve Cell, by Dr. Stewart Paton, of Baltimore; Cases of Poisoning with Morphine and Atropine, by Dr. Philip Zenner, of Cincinnati; Two Cases of Insular Sclerosis, with Demonstration of Specimen, by Dr. G. D. Putnam, of Boston; A Case of Lower Arm Type of Paralysis Dating from Birth, by Dr. John J. Thomas, of Boston; The Cerebral Origin of the Knee-jerk, by Dr. J. W. Courtney, of Boston; On a Cervical Type of Spinal Syphilis Closely Resembling Syringomyelia, by Dr. B. Sachs, of New York; Paralysis Agitans in Early Life, Complicated by Symptoms Suggestive of Multiple Sclerosis, by Dr. B. Sachs, of New York; The Work of a Large Dispensary Clinic, by Dr. Smith Ely Jelliffe, of New York, and L. Pierce Clark.

**Wouldn't be Vaccinated; Dies.**—Health Department officials are pointing to the death of Charles Stevens to-day as a signal instance of the fallacy of the anti-vaccination position. As secretary of the Anti-Vaccination League of Milwaukee. Mr. Stevens had steadfastly refused to be vaccinated. It is regarded as a significant fact that the attack to which Mr. Stevens succumbed was the most malignant case of smallpox on record in that city. From the first the physicians entertained scarcely a hope of saving him. Mr. Stevens had frequently denounced vaccination as a barbarous practice, entirely without efficacy in either preventing or staying the progress of smallpox.

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## CORRESPONDENCE.

### TRANSACTIONS OF FOREIGN SOCIETIES.

#### British.

MULTIPLE MYELOMA WITH BENCE-JONES PROTEID IN THE URINE—SOME CONDITIONS SIMULATING APPENDICITIS WITH CASES OF APPENDICULAR ABSCESSES IN UNUSUAL POSITIONS.

Dr. F. Parker Weber, at a meeting of the Royal Medical and Chirurgical Society, held March 10, 1903, read an account of a case of multiple myeloma with Bence-Jones proteid in the urine. He said that the patient, a rather fat man, aged fifty years, complained of rheumatoid symptoms commencing about the end of the year 1899. About February, 1900, he began to suffer from pains in the loins and stiffness in the small joints of his hands. Soon afterward the upper part of his back began to bend, so that he always had a stooping attitude. Previous to this illness the patient had been strong, but as a young man had had gonorrhea and a chancre on the penis. One of his sisters suffered from diabetes mellitus. The urine of the patient was found to contain the Bence-Jones proteid. The daily amount of the urine was about 2,000 c.cm., and it contained about 7 per mille of the proteid as measured by Esbach's albuminimeter. By a more exact method (precipitation with alcohol, drying and weighing) Dr. R. Hutchison found that about 15 grams of the proteid were excreted daily. The reactions of the proteid were the typical ones described by Bence-Jones, Dr. Kuhne and Dr. T. R. Bradshaw. For some time the patient's condition remained fairly stationary, and at first, by the use of local massage, hot baths, etc., the power of bending his fingers was improved. Afterward the general weakness, cachexia and anemia greatly progressed and gummatous disease of the tongue and on one rib made its appearance. Examination of the patient's blood showed slight leucocytosis. In January, 1901, it was found to contain about 23 per cent. of the normal hemoglobin. In the cubic millimeter there were 2,980,000 red cells and 11,000 white cells (25.6 per cent. lymphocytes, 3 per cent. large mononuclear, 70.3 per cent. polymorphonuclear and 1 per cent. eosinophile). No myelocytes or atypical cells were detected among the leucocytes. On Jan. 25, 1902, the patient died after a copious hemorrhage from the intestines, which post-mortem examination showed to be due to chronic ulceration of the duodenum. The Bence-Jones albumosuria persisted to the last. At the necropsy the bone marrow of all the bones examined was found to be more or less affected by a diffuse sarcoma-like growth of rounded or polyhedral mononuclear cells, a form of "multiple myeloma" or "myelomatosis." A report on the microscopic characters of the new growth by Professor R. Muir was quoted. The presence in the tumor of cells containing granules and globules of various sizes constituted a striking histological feature in the present case. The new growth was confined to the bones and formed no localized tumors projecting from the bones, such as had been noted in some cases of multiple myeloma. In fact, neither by direct extension nor by metastasis were any other parts of the body involved. Dr. Hutchison and Dr. J. J. R. Macleod made a careful chemical investigation of the bones, blood and organs, but failed to find in any of these tissues or organs a body giving exactly the same reactions as those of the Bence-Jones proteid in the urine. From vertebræ and ends of the femur, however, they obtained a proteid giving very similar reactions, differing somewhat in the temperature at which it coagulated, and in not being redissolved on boiling. Moreover, no similar proteid could be obtained from normal red bone marrow.

They argue that in the present case the bone marrow was probably the seat of production of the proteid excreted in the urine, and that this proteid was not a non-assimilated digestive proteid as suggested by Magnus-Levy. Though the case was complicated with syphilitic gummata, chronic ulceration of the duodenum and a generalized rheumatoid affection of the joints, it was a typical one of multiple myeloma with Bence-Jones proteid in the urine, the "myelopathic albumosuria" of Dr. Bradshaw, in Italy called "Kahler's Disease." When the diagnosis was first made, it was probably the second case of the kind recognized *during life* in England, the first one being that recorded by Dr. Bradshaw in 1898. In the latter part of the paper various questions regarding multiple myeloma with and multiple myeloma without "Bence-Jones albumosuria" were discussed, and a summary was appended of all the hitherto recorded cases in which the Bence-Jones proteid had been detected in the urine, including certain cases in which no bone disease was discovered, and certain other cases in which the reactions of the proteid in the urine were not quite characteristic. Multiple myeloma was regarded as a convenient term to include various forms of the new myelogenic growth. Two types were to be distinguished: (1) A growth like the present in which the bone marrow only was involved; (2) a growth in which nearly all the cells resembled small or large lymphocytes and in which lymphatic glands as well as bone marrow were affected. Taking all the data that could be obtained into consideration, Dr. Weber stated the following conclusions: (*a*) That Bence-Jones albumosuria was always the result of bone-marrow disease; (*b*) that it was due to an abnormal metabolic or degenerative process in the myelocytes or in the tumor cells derived from the myelocytes or their predecessors; (*c*) that the reason why it was not generally associated with myelogenic tumor formation was that the tumor cells derived from the bone-marrow cells, however much they might morphologically resemble true bone-marrow cells, were more prone to abnormality than real myelocytes, and (*d*) that non-myelogenic tumor cells were not affected in the same way and therefore metastatis tumors in the bone marrow did not give rise to Bence-Jones albumosuria like myelogenic tumors.

Dr. Bradshaw of Liverpool said that when, five years ago, he first brought a case of myelopathic albumosuria to the notice of the society not more than six cases had at that time been described and at the present time no less than 32 cases had been recorded. He considered that myelopathic albumosuria should be recognized as a definite disease, distinct on the one hand from osteomalacia and on the other from multiple tumors in the marrow unattended by changes in the urine. He referred to a case of the disease at present under the care of Dr. J. Barr, in which sudden paraplegia and cystitis followed a feeling that "something had given way" in the back. He next dealt with the question whether the proteid was an albumose or an albumin. He said that in its chemical behavior it seemed to be intermediate between a native albumin and proto-albumose. The coagulum by heat was much more soluble than that obtained from native albumin and had been said not to be a true heat coagulum. The nitric acid reaction was identical with that of proto-albumose, and, on the other hand, it was not dialysable. The term "albumose" was applied by physiological chemists to bodies which differed considerably from one another in their chemical reaction. Thus one member of the group, hetero-albumose, was insoluble in distilled water, proto-albumoses were coagulated by nitric acid, and deutero-albumoses were not coagulated by nitric acid. The essential idea of an albumose was a proteid derived from albumin but with a smaller molecular weight and of less complexity than the latter. Now all the albumins commonly met with contained a hetero-albumose group or radicle and yielded hetero-albumose and other albumoses when digested, and it had been shown by Magnus-Levy that the Bence-Jones proteid did not contain the hetero-albumose and therefore was probably an albumose. He considered that it was probable that the new growth in the bones was the seat of the formation of the albumose. He pointed out that the disease more frequently affected males than females.

Dr. Macleod said with regard to the exact chemical nature of Bence-Jones albumose that its chemical reactions would indicate that it belonged to the native proteid group rather than to the proteoses. The biuret reaction was of a distinct violet color, not a rose pink, which was characteristic of the proteoses. From its other reactions no definite opinion could be deduced. To decide whether the albumose proteid was derived from the gastro-intestinal tract or not, it would be necessary to restrict the proteids of diet to a greater extent than had been done in Dr. Weber's case. By its chemical reactions its chemical nature could not be determined, but this in any future case might be done by injecting it into the blood of an animal and finding if a specific precipitin was developed.

Dr. W. Lee Dickinson said that the occurrence of Bence-Jones albumosuria was characteristic of myeloma of the bones and did not occur in cases of osteomalacia, lymphadenoma of the marrow, or Hodgkin's disease. He referred to the excess of lime which was frequently found in the urine of diabetic patients and asked if any such excess had been found in this case.

Dr. Frederick S. Eve, at a meeting of the Medical Society of London, March 9, 1903, read a paper entitled, "Some Conditions Simulating Appendicitis with Cases of Appendicular Abscess in Unusual Positions." Five cases of tuberculosis of the cecum were related, the symptoms of which closely simulated appendicitis. All gave a history of recurrent attacks of pain, sometimes commencing suddenly. One patient was supposed for years to have suffered from gastric ulcer, the pain being referred to the epigastrium. In nearly all the cases constipation existed, but vomiting was not marked except in one instance. The chief point in which they differed from appendicitis was in the slight character of the local tenderness. A swelling of firm consistency, due to a thickened, indurated and contracted cecum was observed in all. The appendix was only found once and was not tuberculous. In one case observed by Mr. Eve in 1901 there was chronic obstruction and a short-circuiting operation was performed with good result. The condition had been mistaken, in one recorded case, for carcinoma, from which, however, it was distinguishable clinically by the absence of leucocytosis. Allusion was made to the difficulties in diagnosis in some instances between appendicitis and affections of the gall-bladder, kidney and intestine, such as carcinoma, colitis, and obstructions by a band in the right iliac fossa, cases being quoted in illustration. In appendicitis the localization of the pain and the position of the abscess were subject to great variations, owing to modification in the length and position of the appendix itself and vagaries in the position of the cecum and other abdominal organs. In one case the pain was referred to the right loin, owing to the tip of the appendix being attached beneath the liver and in another the pain was always localized in the left flank. Cases of appendicular abscess beneath the liver and about the umbilicus (owing to non-descent of the cecum or unusual length of the appendix) were related. Great difficulty might be experienced in distinguishing appendicular abscess within the pelvis from inflammatory and suppurative affections originating in the genital organs. A case of pyosalpinx was quoted in which the pain and tenderness were referred to the right iliac fossa and a case of suppurative ovarian cyst was related which had, for three years, given rise to attacks which were believed by several good observers to be due to appendicitis.

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**Residual Urine.**—In old men with an enlarged median lobe of the prostate the base of the bladder is divided by a transverse dam into an anterior and posterior pocket. The former is drained by the urethra but the latter is not so drained in the upright position. H. E. Hale (N. Y. Med. Jour., Feb. 14, 1903) recommends a method by which some patients may easily void what would otherwise be residual urine thus avoiding cystitis and the necessity of catheterization. The patient is directed to void his urine twice daily while in the knee-elbow position. If the bladder wall has lost its tonicity no benefit will be derived.

## SOCIETY PROCEEDINGS.

### THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

*Stated Meeting, held Jan. 19 and Feb. 2, 1903.*

**Case of Intussusception.**—Dr. Cullen introduced this patient, a boy of five years, who had typhoid at two years, diphtheria at three years, and diarrhea during the last summer. On Dec. 23 he was taken sick with dysentery. When seen by the physician at 11 A.M., Jan. 3, the abdomen presented nothing abnormal. At 11.30 there was a bloody stool and at 3 P.M. the classical sausage-shaped tumor appeared. The operation was done at 4.30 P.M. Fluid blood was found in the abdomen and 10 inches of the transverse colon was found invaginated in the ascending colon. There was a mass in the colon which, on examination, was found to be an inflammatory thickening. The colon was stitched to the abdominal wall to prevent recurrence.

**Tuberculosis of the Kidney.**—Dr. Cullen also presented this patient, a female with a history of cystitis. When examined a year and a half ago there was a redness about the right ureter and tubercle bacilli were found in the urine coming from it. There was normal urine on the left side. Dr. Osler found no signs of tuberculosis elsewhere in the body and the patient refused operation, went home and improved steadily. The patient has recently returned, however, and the kidney which was removed, showed very little renal tissue. She did well for four weeks after the operation, when her temperature rose to 104° F. and higher. No tubercle bacilli were found in the urine of the other kidney, nor were there signs of tuberculosis elsewhere. Two weeks later rose spots appeared and three days after that the typhoid serum-reaction was positive. Blood cultures were also positive. The only clue as to the source of infection is that during convalescence after operation the patient's father brought her a bucket of oysters packed in ice. She is now entirely well.

**Carcinoma of the Kidney.**—A third patient of Dr. Cullen is a female of twenty-six years, who was seen at Easton, Md. Six months ago she felt a small nodule in the abdomen and the tumor has grown rapidly. After an inspection of the other kidney a large carcinomatous kidney was removed.

**Hydronephrotic Kidney.**—A fourth patient of Dr. Cullen is a female who had "a fever" at two years, after which she was weak until puberty. A fulness then appeared in the left side which continued until she was twenty years old. During the last few years she has felt a mass in that side. At operation the ureter was found to be 1 mm. in diameter and no fluid could be passed through it. After determining that the other kidney was in good condition, the huge kidney, 30 cm. long, consisting of a great mass of cysts, was removed. The patient is doing well.

**Hematoma of the Abdominal Wall.**—In a fifth case of Dr. Cullen there was a mass 7.5x5 cm. above and to the right of the umbilicus. The diagnosis lay between a tumor of the pancreas, kidney and gall-bladder. At operation the muscles were found adherent to the tumor and 500 c.c. of tarry blood-clot escaped. A skin incision was made on the left and it was determined that the mass was extraperitoneal, lying between the peritoneum and the transversalis fascia. Gall-stones were found and removed. This is the first case which he came across in which there was hematoma without known origin and simulating an abdominal tumor.

Dr. Osler remarked that the hydronephrotic kidney must be clearly distinguished from the congenital cystic kidney. In the former the obstruction might be intermittently overcome and the fluid allowed to flow.

**Removal of Foreign Bodies from the Eye.**—Dr. Randolph said that the first recorded use of the magnet for the withdrawal of foreign bodies was by McCowan in 1874. He made an incision over the sclerotic and used an ordinary magnet. In 1879 Hirschberg used an electromagnet for the first time. This was merely a magnetic probe and its point had to be near or in contact with the foreign body. It was used until 1893 when Haab introduced his giant magnet, weighing 200 pounds. The disadvantage in this is that the foreign body follows the shortest path from its position to the point of the magnet, frequently producing additional injury.

In the four cases here reported Sweet's modification of the method was used. He locates the foreign body accurately with the X-rays, makes an incision opposite to it and then allows the magnet to act. One of these cases was seen in June, 1902, the other three during the last few months. All the patients were employes of the Baltimore and Ohio Railroad. In three of the cases a general anesthetic was used, although it is said that cocaine may be used ordinarily. The great advantage in extracting early is seen from the fact that the men who were operated on, three or four days after the accident, have good vision, while one who was not treated for eighteeen or nineteen days, has lost his sight. Even if the vision be not preserved it is a great advantage to have a sightly eyeball. Haab had reported 165 cases treated, 55 of whom are recovering their sight.

**Uncinariasis in Southern Cities.**—Dr. Stiles said that hookworm disease was described on the papyri of ancient Egypt. In 1893 Blickman of St. Louis described the first case in this country. It was imported and was due to *Uncinaria duodenalis.* In 1896 five or six cases were reported in Buffalo but were not fully authenticated. In 1898, when the war with Spain began, the Bureau of Animal Industry warned the War Department of the danger from hookworms, which was likely to threaten our soldiers in Cuba and Porto Rico. During that year Ashford found the typical anemia and eggs of hookworms in the stools in Porto Rico. He published 19 cases and warned the medical profession of the danger from soldiers returning home. As the troops returned from Cuba further cases were reported here and there, 35 in all having been published up to May, 1902. At this time a new parasite was described, almost simultaneously in Galveston, St. Louis, and Porto Rico. Permission was obtained from the government to thoroughly examine the triangular region, whose angles were at these three points. Four days were first spent at the Richmond penitentiary, where 1,200 men were seen but no cases detected. At one of the copper mines in North Carolina a case was found and from that point onward, throughout the mining country, a large number of typical cases were detected.

It is an interesting fact that the cases were always found in sandy soil, never in clay regions. This brings to memory that when the seal fisheries were such a subject of controversy between England and the United States, a study of their diseases shows that 17 per cent. of the seals died of *Uncinariasis* and that the pups always died on sand rookeries. Among the so-called clay-eaters in the sand hills of the South 40 cases were found in three days. One family of 11 clay-eaters were all affected with the disease. A study of the employes of the cotton mills of Macon, Georgia, showed that the children who came from sandy districts were the only ones affected and that their anemia, which had been striking when they came to the mills, had steadily decreased after they went to work. Very few cases were found in negroes. After a short experience in observing the typical appearance of persons affected with *Uncinariasis* it became possible to pick "suspects" out of a large crowd without any difficulty. In an orphan asylum which was visited, the children were lined up in two rows and by merely walking down through the lines it was possible to pick out suspects and by examining their feces later, determine the presence of the disease.

The result of the trip may be summed up as follows: (1) *Uncinariasis* is preeminently a disease of the sand-hills; (2) the cases occur in groups like those of *Trichinosis;* (3) it is more severe in whites; (4) although usually described as a disease of adult males, the severest cases on this trip were found in women and children; (5) infection is severer in summer; twenty-four hours of freezing temperature kills the eggs and larvæ; (6) miners, farmers, brickmakers and children are most often affected; (7) it is severer in blondes.

In regard to the symptoms the cases may be grouped as light, medium or severe. (*a*) The light cases are apparently well but have eggs in the feces. They may have diarrhea but their most striking symptoms are that they cannot work long or walk far without becoming tired. (*b*) The medium cases show little more than an anemia which resembles other secondary anemias. (*c*) The severe type of cases were well described in 1868 by Pitt, who wrote about the clay-eaters of the South. The patients are undergrown, stunted both physically and mentally, the complexion is either a chalk-white, lemon-yellow, or tan, presenting the same features that may be seen in pernicious anemia. The skin is like parchment. There is grave anemia of all the visible mucous membranes, the eye is dry and has a cadaveric, fish-like stare, like that seen in alcoholics. This was described as early as 1835 by Southern writers. The cases can be distinguished from those of other anemias by the appearance of the eye alone. The expression is something like that seen in the eyes of a patient suffering with an epileptic attack. In this connection it is interesting to note that the negro "mammies" of the South depend on the dilatation of the pupil for the recognition of the presence of worms. It seems likely that there is a condition of toxemia. Italian observers have noticed that the urine of patients affected will produce anemia in animals, so that we have to deal with the toxemia as well as with the anemia. The pulsation of the veins in the neck can be seen and the patients often complain of "a jumping at the neck." The ribs are prominent, the thorax emaciated, the abdomen swollen and edematous. Hair is absent on the body except on the head, the pubes and legs being quite smooth. The extremities are emaciated and the legs, especially about the ankles, edematous. The testicles are rudimentary, the penis very short. In a boy of sixteen years, for instance, the testicles may not have descended. The breasts of a girl of twenty years are like those of a girl of eleven years and the vulva like that of a girl of nine or ten years. As to the digestive system the appetite is either ravenous or light. There is usually some idiosyncrasy, the patient having a great leaning toward pickles, lemons, salt, resin or even clay. In one case the patient was known to have eaten live mice. Indigestion is common and is accompanied by pain in the epigastrium. The stools are reddish brown.

As to the diagnosis it would be foolish to expect the rural practitioner to use the microscope. For him the following test has been devised and will give a correct result in 70 per cent. of the cases. One ounce of the feces are placed upon a piece of blotting paper and then shaken off. If the patient have hookworm disease, the paper is stained red-brown, as if with blood. There may be either diarrhea or constipation.

As to the circulatory system the pulse was found anywhere between 80 and 132, frequently 120, unaccompanied by a rise of temperature although occasionally there was a rise to 102° to 103° F. There is marked venous pulsation and hemic murmurs are often heard. It was impossible to make a blood count on this trip.

*Skin.*—Ulcers on the legs are frequent. If cut or bruised, the skin wound heals very slowly.

*Nervous System.*—Usually stupid, the patients are in addition, either shy or excitable. They have headache and some dizziness and are generally unable to study.

*Genital System.*—There is irregular menstruation, many girls attaining the age of twenty-two years before its commencement. Girls of twenty-six years were found who menstruated only in winter. Sterility is evidently unimpaired, for in the sand-hills many families were found with from three to twenty children.

It is not true that the diagnosis can only be made with the microscope. If there be a clay-eater in the family and several in the family have anemia, if they live in sandy soil and if there be no privy, you are safe in saying that the whole family has *Uncinariasis.* With a little practice you can make a diagnosis in 75 per cent. of the cases, especially if the blotting-paper test be used.

*Treatment.*—Thymol and male-fern are the two drugs used, the former being preferable. Two grains of thymol are given at eight and again at ten, followed by a dose of castor oil at twelve. These may be repeated in a week. With regard to the administration of thymol in brandy, it is known that a small dose thus given will throw a dog into convulsions, but there will be no harmful effect without the brandy. It is, therefore, safer to give the drug in powder form.

*Prophylaxis.*—(1) *Uncinariasis* is a disease of the country, not of cities, on account of the drainage facilities of the latter. (2) Dispose of the fecal matter in infected localities; this will prevent a spread of the disease. The simplest method of disposal is to spray the feces with oil and burn them. (3) Get the people in an infected locality to build privies, to use them and occasionally clean them.

*February 2, 1903.*

**Enucleation of Sarcoma of the Tibia.**—Dr. Bloodgood said that nine years ago the patient's leg was injured. Ever since then he has noticed pain and tenderness there and has had what he called "a game leg." Two and a half years before being examined he noticed a slight growing swelling in the leg, causing a uniform expansion of the tibia. The growth felt hard and was rougher than the shaft beneath it. The X-rays showed a soft tumor which at operation was readily shelled out of the surrounding bony tissue and was found to be a giant-celled sarcoma of the medullary cavity. The granular tissue in the wound was examined microscopically two weeks ago and no evidence of recurrence was found. At present bone formation may be observed in the granulation tissue. As giant-celled sarcomata contain no bone and no bone formation the outlook is good. Giant-celled sarcomata are the least malignant of all the types of sarcoma.

**Two Cases of Cervical Rib.**—Drs. H. M. Thomas and Harvey Cushing presented two cases. The first patient, a female, was admitted to the hospital May 21, 1902, complaining of curious nervous symptoms. She had had pelvic trouble subsequent to the birth of a child and had had double oophorectomy done. One year ago she commenced to have intense paroxysmal pains down the right arm. The arm became weak and the hand atrophied. There was some trouble in the right leg. On examination the atrophy of the hand and the weakness of the arm were noted but no anesthesia was found. Electrical treatment was given, as if for a local neuritis but the pain became still worse and there were one or two so-called attacks of unconsciousness with convulsions. A lump developed on the right arm. At this point it was thought that there might be a tumor pressing on the nerve roots. Eventually anesthesia developed in the right arm and sensation in the right leg was also impaired. When examined by Dr. Cushing the anesthesia extended to the face and chest. There was thus a hysterical paralysis accompanied with local disturbances. The pupils were normal. There was reaction of degeneration in the right thumb and first interosseous muscle. At operation a cervical rib was found with a fibrous band extending from its tip to the first thoracic rib, pressing on the brachial nerves. On the day after the operation the anesthesia entirely disappeared; the motor power, however, has not yet returned.

The second case is that of a female, twenty-one years old, who has noticed a weakness in the right arm since she was seven years old. She ascribed this to carrying a heavy umbrella. Her arm was completely paralyzed for three months and then slightly recovered. Two years ago the right hand began to waste, but it could be used for sewing until two weeks ago. On examination nothing was found except atrophy and weakness of the right hand. The pupils were equal. The extensors of the right forearm were weak, the strongest muscles being on the radial side. There was a definite disturbance of sensation along the ulnar border, reaching almost to the axilla, the patient being unable to distinguish between the head and point of a pin. Electrically it was difficult to get any response except from the radial flexor. To summarize, there is a widespread paralysis of the forearm muscles supplied by the first thoracic as well as by the eighth cervical and second thoracic. The diagnosis lies between (*a*) acute anterior poliomyelitis; (*b*) syringomyelia; (*c*) and an acute lesion in the brachial plexus, due perhaps to hemorrhages, as suggested by Buzzard (Brain, 1902). The X-rays show, if not a rib, at least an enlarged transverse process extending from above the first thoracic vertebra.

**The X-rays at the Massachusetts General Hospital.**—Dr. Codman said that the results with the X-rays may be summarized as follows: Many disappointments; occasional success; much hope for the future. No patients are more zealous or more hopeful than those who come for X-ray treatment. The therapeutic X-ray work has had some remarkable results. Of the deep malignant tumors, treated thus, few have been improved, none cured and some helped by softening of the growth, which was accompanied by a gain in the patient's weight. Of epitheliomata, 100 have been healed or are healing. In April, 1902, Dr. Warren operated for a cancer of the tongue and in May the X-rays were started for prophylaxis and were used until a dermititis was set up, which prevented a further use. In a case of cancer of breast which had seven spots of cutaneous recurrence, five of these were cured and two are healing. Two cases of cancer of bones were unsuccessfully treated, one of the patients being eighty years old. One year ago it was definitely stated that deep malignant growths could not be cured by X-rays unless thay had reached the skin and caused ulceration. Three months ago, however, Dr. Warren operated for a sarcoma of the sternoclavicular region. The pathological report of the tumor stated that it contained small round cells with occasional muscle cells and much karyokinesis. It may, therefore, have been syphilitic or a chronic inflammation. When first treated with the X-rays, however, there was a mass 5 x 2.5 cm. present; now absolutely nothing abnormal can be seen. Another case of sarcoma of the clavicle was made worse by the X-rays.

Lupus, psoriasis, and eczema have been healed as if by magic, although in some cases there has been recurrence elsewhere. There are many reasons for believing that the therapeutic effect of the X-rays is due to their stimulation of the nutrition of the parts involved rather than to their atacking the malignant growth. The chief reasons are (1) the action is very slow, often not being manifested for weeks; (2) there is primary stimulation of the skin, evidence of which is seen in the exfoliation and hyperemia; (3) in a cancer there is frequently no destruction of the tumor but a degeneration of its center; (4) the shrinking of the malignant cells may be due to the activity of the surrounding tissue; (5) as in the case of eczema due to varicose veins, stimulation of the circulation causes healing; (6) the activity of the malignant cells is of a kind that would be helped rather than hindered by the stimulation.

Our method of treatment will depend upon the theory we adopt. My rule is to make exposures for ten minutes at a distance of ten inches twice a week until hyperemia appears or until the end of the third week. Never allow a burn of the skin to occur. A dermatitis is usually caused in two weeks, it being usual to see a hyperemia after 40 to 100 minutes' total exposure at ten inches. Psoriasis and eczema disappear sooner. The epithelioma begins to be destroyed at the onset of the hyperemia. Great care must be taken not to destroy tissue, for there are already two cases on record in which cancer developed in the site of an X-ray burn. It seems probable that in certain cases of cancer of the breast the X-ray will bring great relief.

Dr. Halsted said that in a case of cuirass cancer Dr. Williams, of Boston, obtained very great improvement with the X-ray. In another case a cancer of the breast was evidently improved under treatment when a burn occurred. After several weeks without treatment the cancer disappeared, supporting Dr. Codman's theory that the therapeutic effect of the X-rays depend on stimulation of the nutrition. It seems possible that we may be wise in exposing a cancer of the breast to the X-rays directly after operation, perhaps while yet on the table.

Dr. Bloodgood spoke of a case of epithelioma of the lip, 1 x 0.5 cm. in diameter, which had lasted one year, was treated with the X-rays and although there was no increase in its size for a year, still the superficial ulceration remained. The tumor was excised by Dr. Finney. It did not look like an epithelioma and the microscope showed practically no epithelial invasion but only granular tissue.

**The Physios of the X-rays.**—Professor Ames said that many years ago Clark Maxwell said that great light would be thrown on the nature of electrical waves by the study of discharges in vacuum tubes. Crookes made such a tube and demonstrated cathode rays. Roentgen, of Würzburg, went further and proved that (1) the radiations from vacuum tubes containing cathode rays have both photographic and electrical effects; (2) there is a radiation from any surface upon which the rays impinge; (3) the rays go in a straight line and their penetrating power, depends upon the atomic weight of a given subject. If a target be joined to the anode there is greater radiation.

Three men, Lehmann, Stokes and Thompson have recently contributed greatly to our knowledge of the rays. Thompson thought the disturbance was due to the discharge of minute bodies from the cathode, traveling perhaps at the rate of 60,000 miles a second. It has recently been shown that there is really no matter in motion but only an electrical change. The X-rays are not waves but irregular pulses, or rapid disturbances of the ether. To work for increasing length of spark is in the wrong direction. What is needed is to seek greater volume of current.

## THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

### SECTION OF CLINICAL MEDICINE AND SURGERY.

*Stated Meeting, held Feb. 6, 1903.*

**Case of Cretinism.**—Dr. Hirsch exhibited this patient, a girl five years old, when brought to the Maryland University Hospital. Her uncle died of tuberculosis, one aunt died of goiter and two cousins were affected like the patient. Her father and mother are well. The patient herself was delivered with instruments, had her first tooth at eight months but made no effort to stand or walk even when considerably more than a year old. On examination she was found to be dull and even idiotic, the eyelids flat, the alæ nasi dilated, the skin thick and dry, the teeth decaying, the canines and anterior molars being absent. There was a downy growth on the back. The abdomen was protuberant. Speech was indistinct and the patient was unable to walk unaided. Thyroid treatment was commenced at once, the patient receiving half a grain at first and later two grains three times a day. Improvement was noticed in four weeks, at which time she could stand like a child of a year old. Three months later the skin had lost its harshness, the abdomen was less prominent, she had grown 5 cm., and her mental condition had markedly improved. At the present time, a year and a half since commencing treatment, she is like any other child of six years, having grown 22 cm. during that time, her mental improvement being the most striking thing. Her alæ nasi are still dilated but the presence of adenoids may particularly account for this. The patient now received nine grains of thyroid daily. As is well known there are three groups of cases pathologically: (*a*) gland absent; (*b*) gland atrophied; (*c*) sporadic cretinism with goiter.

Dr. Osler asked how far and how long the treatment should be continued. He had a recent visit from a case of sporadic cretinism whom he first saw ten years ago. The patient was then a child of three or four years. At that time she was a driveling idiot. She is now a girl of fourteen years, well grown and well nourished. On one occasion the thyroid treatment was omitted for eight or nine months with very marked retrogression. Probably, as in cases of myxodema, the treatment must be lifelong. Some of the cases are doubtless cases of thyroid insufficiency.

Dr. Atkinson confirmed the opinion that the treatment had to be kept up constantly and thought it would be best to give it every day.

**Case of Multiple Sclerosis.**—Drs. Preston and Hirschberg introduced this subject. Spiller reported 10 cases of multiple sclerosis among 3,000 cases of nervous diseases. At Bellevue Hospital, where 12,000 cases are treated each year, there are usually one or two of this disease. Sachs expresses the opinion that it is not as prevalent in Europe as generally thought. Of 126 cases reported in the literature, 31 had a former history of importance. The disease occurs most frequently between the ages of sixteen and forty-five; it is occasionally congenital. About one case in two years is the incidence of the disease at the City Hospital.

The present case is that of a male, thirty-four years old, a fireman, who was admitted Dec. 14, 1902, complaining of vertigo and nervousness. His mother died of cardiac disease; one brother of concussion of the brain, two of lead-poisoning. The patient has had typhoid fever, but no trouble with his eyes or speech and no venereal or cutaneous diseases. Before the present illness he was a miner, using whisky to excess, also gin and crude alcohol as much as a pint a day of the latter, emptying his miner's lamp for this purpose. Seven years ago, while working in a mine, a heavy piece of slate fell on his head. He was unconscious for 12 hours and dazed for three weeks, being in bed all the time. For two years he was more or less dizzy, but was quite clear mentally. Then the dizziness began to increase and was associated with headache and vertigo, increased by exertion. Two or three times a week he fell over during a dizzy turn, usually backward. He was never unconscious. He feels a pressure like that of a vise on the back of his head and then a reeling sensation and the ground seems to be pulled away from him. His hands seem thick and vision appears blurred, objects being seen double and triple; the knees and legs are weak and the muscles stiff. His speech has been thick and more deliberate since the injury and is worse during the attacks of dizziness, which lasts ten minutes longer if in a crowd. During the intervals he has a dull headache but no vomiting. His head feels hot and swollen and he has to wear glasses for nearsightedness. He has difficulty in bringing a glass to his lips because of the swaying of his hands, especially the left hand. He walks unsteadily, fearing he will fall, as he is very apt to do if he turns rapidly. His fingers grow stiff when he writes and the letters are irregularly formed. His memory is poor and he is absent-minded. He sleeps well but has to rise several times for micturition each night. He finds himself laughing very easily at light thoughts passing through his mind and at other times he has periods of uncontrollable peevishness and irritability without any cause. There has been no paresthesia but occasional neuralgic pains in the legs. No shooting or girdle pains; no ulcers or other trophic disturbance. He is constipated. On examination the patient answers intelligently, although not immediately. His memory is good for recent events only. In speaking he separates the syllables and jerks them out with irregular accent. There is a curious tremor of the tongue. There is no oscillatory nystagmus but there is vertical nystagmus. There is left internal strabismus; no optic neuritis or atrophy. There is a curious oscillatory tremor of the fingers when trying to touch his nose. This is worse in the left hand. The gait is jerky but not paraplegic; he walks as if pitching against something and almost falls if he moves rapidly. The knee-jerks are very active, the tendo Achilles reflex increased. No ankle clonus. No Babinski's reflex. His writing is forced and scratchy but the tremor is fairly well controlled. There is a slight tremor but no paralysis of the vocal cords. The urine contains a trace of albumin but no casts. His diplopia is quite marked.

Dr. Reuling suggests that this may have been a case of traumatic sclerosis. In a recent case which he had seen there was scanning speech and ataxia. The patient had attacks of mutism when for 12 to 24 hours he could not speak. He had also paresthesia on the same side as that of the injury. There was a central scotoma.

Dr. Osler said that Bramwell recently commented on the greater frequency of multiple sclerosis in England than in the United States. In the National Hospital for the paralyzed and epileptics there are always three or four cases of the disease. It is not merely that the cases are overlooked in this country. We may mistake the disease for hysteria unless we have read Buzzard's article. The ordinary typical cases are very rare. He saw more cases in Montreal in ten years than here in thirteen.

Dr. Hirschberg stated in conclusion that the patient had been improving and had shown no signs of melancholia. The fact that the disease had lasted seven years pointed to its being organic.

**Poisoning by the Castor-oil Bean.**—Lieutenant Bispham said that while at a prison-post in Cuba he was called one night and found two dozen prisoners all complaining of nausea and vomiting, none of them, however, seeming to be particularly ill. Three of the cases may be mentioned in detail: The first was admitted to the hospital on Jan. 6, having eaten 14 beans on the evening of Jan. 4. He felt sick after supper and became nauseated and vomited at 10 o'clock; he had cramps in the region of the liver and in the limbs all night. Temperature 99° F., pulse 70, urine normal. The treatment consisted of hot-water bottles and morphine. Recovery in three days. The second patient entered on Jan. 6, having eaten 6 beans the day before and having had no symptoms for nearly 24 hours when he had nausea and headache. Temperature and pulse were as in the first case. Recovery was uneventful. The third patient ate one bean on Jan. 4 and was taken sick at 9 P.M., with severe vomiting and purging. His urine had a specific gravity of 1.026 and an increase in sulphates. Temperature 97.5° F. Treatment with morphine and atropine ,rapid recovery.

It is interesting to note that the man who ate 14 beans was very slightly affected, while the one who had eaten one bean became almost comatose and could give no account of himself and had to be carried in. One of the officers was similarly taken ill four hours after eating four beans. He had vomiting and purging and a trace of albumin in the urine. Temperature, 98° F. He recovered in three days.

On examination it was found that the three prisoners with several others had been cutting weeds on Jan. 4. They cut down a lot of the *Ricinus communis.* One of the men collected the beans and shared them with the three prisoners. They tasted like English walnuts. The man who collected them and a sergeant who ate a hundred were only slightly purged, but not really made ill. There was evidently a marked difference in the individual susceptibility to the poison.

Very few cases of this form of poisoning are reported in the literature. In the *British Medical Journal* for 1901 a fatal case, after taking two beans, is recorded. Dr. Winslow had a case at the University Hospital. The patient was a boy of fifteen years who ate 10 or 12 beans and was seized with vomiting. The bowels became very constipated. The patient had a dry tongue, rapid pulse and a mottled, livid skin and seemed to be very ill. Calomel had no effect. Cocaine was given and the food stopped in order to check vomiting. There was delirium and the temperature was subnormal until near the end, and when it had risen to 104° F. At this time there was profuse diarrhea. The patient died on the twelfth day, evidently from cardiac exhaustion. The urine showed a few hyaline casts. It has not been possible to determine the amount of ricin present in each bean.

Dr. Winslow remarked on the striking condition of the skin in his patient, it being pink at times and then purple, evidently because of a markedly sluggish circulation.

Dr. Thayer said that ricin is in many ways similar to the toxin of diphtheria and animals may be similarly immunized against it. He asked if it were not possible that those of Lieutenant Bispham's cases, which escaped serious effects, may have previously eaten the beans? On the other hand, they may have had natural immunity.

Dr. Ruhräh said it may also be possible that the man who ate many of the beans had a profuse and early diarrhea and thus excreted most of the poison.

Lieutenant Bispham replied that the man had not had severe diarrhea. As to whether they had previously eaten of the beans, he did not question them on that point.

## NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

*Regular Meeting, held Monday, February 8, 1903.*

The President, H. Brooker Mills, M.D., in the Chair.

**Headrest for Removal of the Brain.**—Dr. Addinell Hewson gave an exhibit of Dr. B. Stroud's mechanism, together with remarks upon such removal in a private house.

The instrument consisted of a horizontal flat piece of oak and an upright piece in which the head rests, and is secured in place by two screws on the medial aspect of the two jaws, which clasps the head just above the mastoid process, thus holding it absolutely horizontal and firm, the clamps being adjusted by means of the thumbscrews. With this instrument it is possible to remove the brain and the entire dura from the base of the skull, the dura being very easily removed in the case of a fresh body, while, of course, if the body has been dead for some time, very often the embalming fluids interfere with its removal, those containing zinc particularly having this effect. By the use of the laminectomy forceps the entire spinal cord can be removed intact with the brain in a few minutes and, if properly hardened in solutions, can afterward be studied. The author referred to the fact that he had done five operations in life with these forceps, and in every case complete recovery had ensued with great relief to the patient. In one case a man who had previously had five stones removed from the bladder, had the spinal canal opened at the fourth vertebra, the adhesions separated between the dura and the spinal cord, for a distance of six inches above and below the seat of the fracture and the man was able to go about on crutches afterward. Prior to the operation he had had no motion of the lower extremities or control of the bladder or bowels.

Dr. T. Turner Thomas felt that this instrument would be an excellent one with which to make a specimen of the brain and spinal cord, which he thought would be of great value.

Dr. Judson Daland felt that the instrument would be particularly valuable for the performance of autopsies in private houses and for very accurate work in medicolegal cases, and in cases where there is cerebrospinal disease. The two instruments exhibited by Dr. Hewson, for the opening up of the spinal canal, he felt were particularly valuable, and by having the handles made of wood and using a wooden mallet the work could be quickly performed and with but little noise.

**The Diagnosis and Treatment of Bronchopneumonia.**—Dr. Judson Daland called attention to the fact that the disease had become quite prevalent within the past ten years, occurring principally between the months of November and March. There are a variety of causes, such as the irritating gases, iron dust, silica and similar irritants and in many of the constitutional infectious diseases bronchopneumonia is not an uncommon complication or sequelæ. Bronchopneumonia following influenza is quite prevalent during the winter season, in which there occurs an inflammation of the bronchial tubes and alveolar, which being largely leucocytic, may involve only a few of the lobules, or may involve many lobules in the same region, and not infrequently extends to both lungs. This is one of the peculiarities of bronchopneumonia, and is more interesting because it bears upon the question of diagnosis. The case may be of the most trifling character in the begininng, and yet develop into bronchial pneumonia. The micro-organisms in this disease are especially interesting, usually the staphylococci and streptococci, although many believe that the colon bacillus is capable of producing this infection in the bronchial tubes and alveolar. The infection is believed by many to be contracted through the nasopharynx and larynx and certain diseases of these regions no doubt stand in close causal relation to many cases of bronchopneumonia and, even in health, the staphylococci, streptococci and pneumococci are frequently found in these regions. The author felt in the majority of cases the infection began primarily in bronchitis and later the alveolar became affected, mastoiditis also being a not uncommon complication. Thus this swelling of the bronchial tubes interferes with the passage of air through the lungs and, in the course of time produces quite an area of collapse, which it is very difficult to distinguish from bronchopneumonia and also, in association with these other conditions, there is frequently spasm of the bronchial tubes. The author also believed that in certain cases of influenza there was an affection of the nerves that have to do with respiration, by which breathing is interfered with without mechanical obstruction. He felt that, speaking broadly, it was practically impossible to clearly diagnose bronchopneumonia from the symptoms alone, excepting in those cases where the lobules invaded are so numerous that we have a condition analogous to that found in lobar pneumonia. The most important factors, therefore, in the diagnosis, are physical examination and an examination of the sputum. In bronchopneumonia following influenza the area of dulness is usually found below the inferior angle of the scapula. The dulness may occur in either or both lungs and may involve the posterior-inferior lobes. In true lobar pneumonia it is impossible to diagnose the affection by the symptomatology or the physical signs and the inference that it exists may be confirmed by the discovery of diplococci. Reference was made to the frequency with which the physical signs in this condition shift; an area of dulness being outlined one day and on the occasion of the next visit, the same area would probably be resonant on percussion, but the author felt this should be viewed rather as a corroboration than a doubt of the diagnosis. Attention was directed to the fact that too much stress in diagnosis should not be laid upon the presence or absence of bronchial breathing, as frequently, owing to the fact that the lungs are not completely aerated, breath sounds may be either absent or very much diminished, even when there is resonance on percussion.

In the treatment of these conditions, absolute cleanlines of the bronchial tubes and nasopharynx, to be secured by the use of boric acid solutions, was recommended. In order to render the secretions less acid and also to stimulate the action of the glands, the use of one liter of imported Vichy daily, or when it cannot be obtained, a watery solution of bicarbonate of sodium, one to two teaspoonfuls to the pint of water was recommended. Iodide of sodium and iodide of strontium were thought to be the best drugs, the former being best employed in the form of a saturated solution, beginning with two to three drops four times a day and increasing one drop a day until the dose reached five to ten drops four times a day. Most cases are benefited by 20 to 40 drops of the tincture nux vomica and $^1/_{20}$ to $^1/_{30}$ of a grain of nitrate of strychnine at four-hour intervals. In cases where the cough is particularly distressing, $^1/_{24}$ of a grain of heroin or ⅛ of a grain of codeine was recommended. Forced breathing at intervals for four hours was advised in order to thoroughly clean out the bronchial tubes, to secure complete oxygenation and complete inflation of the lungs. Attention was also directed to the importance of absolute rest, stimulation and good food, during the progress of the disease.

Dr. James H. McKee referred to the difficulty experienced in differentiating between the bronchopneumonias following influenza and the typhoid pneumonias in some instances and reported a case which had recently come under his observation which began with an initiatory chill, followed by high fever and a very irregular temperature, and presenting all the physical signs of bronchopneumonia. On the tenth day spots appeared; the Widal reaction was obtained, and leucopenia was present. The subdivision of the bronchopneumonias, as made by Holt, was thought to be of great value, particularly with reference to the bronchopneumonias in children, as the acute congestive form would often prove fatal in these cases before any consolidation could be detected in the lungs. The speaker felt the symptomatology to be particularly deceiving in cases of bronchopneumonia following influenza, which is usually characterized by great fluctuations in the temperature, pulse and respiration. Among the most valuable physical signs were mentioned tympani and impaired breathing at the base of the lungs. Treatment of a simple character and directed more to keeping up the vitality of the patient than to the modification of the course of the disease was recommended.

Dr. Samuel Wolfe felt that more often was it necessary to make a diagnosis from negative than positive signs and that diminished respiratory sounds at the bases of the lungs should always excite suspicion of this condition. While bronchial breathing was considered an ideal symptom, if present, he felt that it would be found only in rare cases. In regard to treatment he did not approve of the deep breathing exercises in the cases where inflammation had already set in, believing that better results would be obtained by frequently changing the position of the patient, thus allowing the infected portion of the lung to keep aeration properly and avoid the injurious effects of gravitation. Where the inflammation had not already developed, he felt that these forced breathing exercises might be of value in aborting the pneumonia.

Dr. Howard S. Kinne felt that forced breathing was inadvisable, as he believed that the lungs should be kept at rest as much as possible when there is acute inflammation. Bronchial pneumonia he stated occurred more commonly in children, while lobar pneumonia is usually found in adults.

Dr. John B. Turner felt that it was a great mistake to regard the pneumonia as being confined to the lungs entirely, as he believed it was a general disease. He referred to an attack of grip, which he had personally undergone in 1889, in which chloral bromide was administered for the cough and, with this, in conjunction with tonic treatment, phenacetin, quinine, strychnine and a teaspoonful of cod-liver oil four times a day, he made a good recovery. As a diagnostic sign, dulness in both bases was mentioned and the importance of observation for some time after recovery in order to prevent such sequelæ as phthisis was commented upon.

Dr. W. E. Parke felt that when the patient had a high temperature associated with physical signs different on both sides, it was strongly suspicious of bronchial pneumonia.

Dr. A. Bern Hirsh referred to the respirator devised by Dr. Burney Hill, by which a few drops of chloroform are administered through the medium of a moist sponge to relieve the cough.

Dr. Francis M. Perkins suggested the value of the stimulation and depression of the spinal nerve radius by the application of heat and cold for the relief of the nervous element in these cases.

Dr. Wendell Reber referred to the statement made by a physician in the West who stated that he believed the pneumonia following influenza was largely a nervous disease. His treatment consisted of placing a bar of iron heated in the oven to the occiput and coccyx; in conjunction with which he used strychnine and iodide of ammonia and had never lost a case.

Dr. Judson Daland, in closing, stated that he had never been able to conclusively demonstrate in his own mind bronchial pneumonia in the adult and referred to an epidemic of this condition occurring among the children of emigrants in which the mortality was about 80 per cent.

The change of the position of the patient he felt to be of value in many instances. Forced breathing also would act as a preventive in many instances; and the opinion was expressed that any harm that might result from this measure would be more than counterbalanced by the good that would be done to the lung. Emphysema may at times vary the physical signs and interfere with the diagnosis of pneumonia. In regard to the likelihood of grip or pneumonia developing into phthisis, he felt that this did not necessarily ever occur; the opinion was expressed that these conditions would render the individual more susceptible to phthisis and in many instances there is primarily a small latent tubercular area, which under the influence of some such disease as influenza will become constitutional, thus calling for careful after-treatment. In regard to cotton jackets and poultices, they seem to be very little used to-day with adults. In reference to the use of the respirator, the author felt that moist air was one of the most valuable therapeutic agents in the treatment of these conditions, but that it could generally be obtained by keeping the air in the room moist without the use of this instrument. As to the influence of heat and cold on the nervous symptoms, he felt that such measures are detrimental. In cases in which the temperature is very high, water at a temperature of 100° F. may be cautiously employed.

In those cases where there has been a constitutional disease, and we have pulmonary manifestations in a short time, the neurotic element arises and becomes prominent. Collapse of the lung following pneumonia was thought to be quite frequent.

## NORTHWEST MEDICAL SOCIETY OF PHILADELPHIA.

*Stated Meeting, held Tuesday Evening, March 3, 1903.*

The President, Wm. Egbert Robertson, M.D., in the Chair.

The retiring President, Dr. Wendell Reber, made an address in which he reviewed the work of the Society during the past year.

**The Early Diagnosis of Pregnancy.** —Dr. J. J. Gurney Williams directed attention to the frequency with which this condition is overlooked during the first ten weeks owing to the atypical symptoms presented, and recommended careful bimanual examination, and observation of both the objective and the subjective signs. In the majority of cases he feels that the patients are led to consult the physician on account of the amenorrhea, for which there are many other causes than pregnancy, which causes he considered under three heads: (1) Those cases in which menstruation has never taken place, which he felt was most likely to be caused by some defective development of the uterus or ovaries, or some constitutional states, such as chlorosis, anemia or phthisis, and reported three cases which had come under his observation; their ages being respectively eighteen, twenty-two and thirty years. In many of these cases menstruation does not begin until the assumption of marital relations. The second class of cases are those in which the menstruation has been suppressed and include by far the greatest number of cases. When a patient of this class presents, previous regularity or irregularity and a history of any pelvic operations should be considered, as even dilatation and curettement may cause one or two periods to be missed. The third class are those cases in which the blood is retained within the uterine cavity or vagina, as from atresia or imperforate hymen, and a physical examination will reveal at once a congenital or acquired condition of the vagina or uterus. Among the various causes for the suppression of menstruation are change of climate, as the country girl coming to the city and starting to work in a mill, fear of illicit pregnancy, desire for offspring, great mental activity, catching cold or getting the feet wet just prior to an expected period. The use of bromides in epilepsy is also said to cause this condition and two cases had come under the author's observation which had suffered from amenorrhea for two months after using a mixture of zinc sulphate and digitalis "to prevent smallpox." Supra-involution following labor or miscarriage and injections to prevent conception may also cause this condition and, as a point of diagnostic import, it should be borne in mind that amenorrhea arising from any other cause than pregnancy usually manifests itself in some constitutional disease, such as anemia, general debility and weakness. The mammary signs are not constant and often misleading, but in pregnancy, the nipple is usually more prominent, the areola darker and Montgomery's tubercles enlarge and, if in combination with these symptoms there is frequent micturition, this is a valuable adjunct to diagnosis. Nausea varies greatly in time and severity. The author felt that the most important reliable objective symptom is the change in the shape of the uterus, which in the virgin is pyriform, and when pregnancy occurs the fundus rapidly enlarges and changes in form and, as this examination can only be made between uterine contractions, repeated examinations may be necessary to find the uterus at rest. Hagar's sign in conjunction with the other symptoms is very valuable after the second month; softening of the cervix is not constant and may be caused by metritis. The bluish discoloration of the vagina just posterior to the urethra can be observed as early as the fifth week and is of considerable value and, when produced by a fibroid or pelvic congestion, is of a lighter blue. A cervix lower than normal and increase in weight of the uterus are important symptoms, and salivation, stimulated or perverted appetite, a feeling of drowsiness and constipation are common symptoms, although valueless except in conjunction with others.

In regard to the diagnosis of ectopic pregnancy his experience was that in every case in which there is vaginal bleeding, or abdominal or pelvic pain, and the woman is presumably pregnant, a careful bimanual examination should be made, as the cases of this condition in which the diagnosis is not made are those which do not present the typical symptoms, such as sudden onset of severe pelvic pain accompanied by a bloody discharge, shreds, a leaky skin, rapid pulse, and probably tympanitis of the abdomen. While there may be a certain amount of conflict in the differential diagnosis of ectopic pregnancy and tubal or ovarian suppuration, it was felt that as both conditions demand operative treatment no harm would result from the procedure and, even in a normal pregnancy, in the vast majority of cases an exploratory incision will do no harm.

The discussion was opened by Dr. Walter F. Woods who directed attention to three classes of cases, in which he had found it exceedingly difficult to make an authentic early diagnosis of pregnancy. (1) Pregnancy occurring during lactation; (2) amenorrhea occurring during the progress of some debilitating disease; and (3) where the patient intentionally tries to deceive the physician. The cause of the difficulty in the first group is that the uterus is somewhat involuted following delivery, requiring from six weeks to three months to return to normal, and if amenorrhea occurs during this period, the abnormal position of the uterus is apt to conflict with the differential diagnosis. In the second class of cases, it is necessary to study all the symptoms which the primary disease might produce and make a diagnosis chiefly by exclusion. The third class of cases require careful investigation, as they are prone to give a false history of the menstrual periods and other symptoms. The patient's history should be carefully noted and considered in conjunction with the physical examination which should be made in all cases and a familiarity with the patient's habits, mode of thought and the physical condition of her genital organs is of value, which places the family physician in a better position to make the diagnosis than one who is called in for that especial purpose. The nervous phenomenon manifested should be given consideration, and in many instances a naturally nervous patient will become of a composed temperament during the first few weeks of pregnancy, and one who usually has a placid disposition will frequently become very irritable. The reflex gastric disturbance which may occur at different times during the day is a valuable symptom and usually before the morning sickness appears there is an undue craving for certain articles of food, while the appetite, as a whole, may remain about normal. In many instances flesh is assumed quite rapidly. To the family physician who is familiar with the shape and position of the patient's uterus, the change in the position and size during the first few weeks of pregnancy may be an important aid in diagnosis. Another important factor is the softening of the cervix, and while this occurs at each menstrual period, it disappears shortly thereafter unless a pregnancy has taken place, in which event it is continuous. This sign is especially valuable in primipara, while in multipara, the variation in the cervix from lacerations, etc., frequently obscures the Hager's sign. The condition of the mammary gland, such as deepening of the color of the nipple and enlargement and pricking sensation in the gland are signs which should be studied in conjunction with the others. One of the most valuable signs, he considered was the irritable bladder—and although menstruation frequently causes a more frequent desire to pass urine, the condition is continuous if caused by pregnancy. The purplish or bluish condition of the vagina should be looked for and, although this may be brought about by pathological states, it usually occurs earlier in pregnancy than in the other conditions, the reason being that in pregnancy the blood is brought to the uterus primarily, while the pathological conditions simply dam up the blood in the uterus so as to produce this sign. Shaeffer's sign, he stated he had never been able to demonstrate.

Dr. J. Thompson Schell felt that one of the greatest difficulties was encountered in the different classes of patients, it being comparatively easy to elicit the various signs in thin women with flexible abdominal walls, while the reverse is equally true of a very stout woman, particularly if she is nervous and excitable. In the latter, if a positive early diagnosis is required, he recommended an examination under ether. The breast changes were considered valuable, although he stated that he had observed them in pathological conditions, but he viewed as the most important symptom the marked anteflexion of the uterus which is usually present. While he did not consider there was one symptom upon which a positive diagnosis could be made, he felt that by carefully considering the added weight to the uterus, the increased amount of vaginal and cervical secretion, with beginning softening of the cervix, the fact that the cervix is generally partially prolapsed, the uterus further down in the pelvis and heavily supported, and by careful vaginal and rectal examination and the so-called Hager's sign, you can say that the woman is probably pregnant. The beginning of a violet color in the vagina later becoming blue is of value, and by three or four examinations at intervals of a week, the diagnosis should be made with reasonable certainty.

In ectopic pregnancy, an early diagnosis is of vital importance, and this condition may exist without the presence of any of the customary signs, such as a history of sterility, etc., the only symptom may be shock. It was recommended that in all cases where the patient complains of amenorrhea, pain in the abdomen, a little leaking from the vagina, that she may be examined under an anesthetic. A case was reported of a woman who had been married for a number of years; had been sterile for seven years, and up to one month prior to the time she was seen had menstruated regularly without pain, at which time she missed a period. There was some pain in the lower portion of the abdomen, but no great evidence of shock and her temperature was normal. An examination under an anesthetic was decided upon, a vaginal examination made and an ectopic pregnancy discovered.

In regard to Shaeffer's sign it was considered absolutely unreliable, except in conjunction with other symptoms and, in the majority of cases, was believed to be absent.

Dr. Samuel Wolfe said that, while he believed that it was practically impossible to make a positive diagnosis of pregnancy in the early months, felt that the family practitioner who was more or less familiar with the physical condition and history of his patients could generally be fairly certain of his diagnosis in these cases. Pregnancy is in many cases suggested by the fact that one of the married patients, who has previously been regular, misses a period, and unless this condition can be accounted for by tuberculosis, the menopause or some other external agency, it takes very little to confirm the diagnosis in his mind, the softening of the cervix and the change in the size and shape of the uterus being among the most important symptoms.

Dr. W. Wayne Babcock reported three cases, the first of which was a woman who had been sterile for eight years, and had been operated upon for laceration of the cervix, after which she developed retroversion of the uterus, which gave her a great deal of trouble, operation being advised to relieve this condition. This was, however, deferred for a number of months and finally she missed a period and passed eight weeks over her time, when an examination revealed the uterus in a retroflexed position with the fundus very large and soft and the cervix very small, leading to the conclusion that she was pregnant. On reexamination a week or two later, the mass was found to be somewhat larger but by feeling carefully could be felt what appeared to be the normal fundus, and you could demark a line between the mass behind the uterus and the cervix. Pain in the pelvis was complained of and a week or two later, extra-uterine pregnancy being suspected, an operation was suggested. On opening the uterus what was supposed to be the fundus of the uterus was found to be a small fibroid, the whole uterus being studded with fibroids, and as they were directly in the path of the child and were growing rapidly, the whole organ was removed.

The second case was that of a woman who is the mother of two living children and nine others, who were born living and died at from six to nine months, the last child having been born about three months previously and the last menstruation having occurred about six weeks prior. She complained of pain in the abdomen and a sense of weight in the lower pelvic region; on examination superficial softening of the cervix and considerable enlargement was discovered and the speaker felt positive that she was pregnant.

The third case was that of a woman who had been wearing a stem pessary for two years to prevent conception, removing it during the menstrual period. The pessary was slightly longer than was necessary. She complained of constant bleeding which she seemed unable to stop. She had a distinctly enlarged and soft uterus but pregnancy was not thought of. A curettement was done and the character and amount of material removed indicated that a pregnancy had taken place, in spite of the precaution, which the speaker viewed as a good field for the development of malignant disease.

Dr. I. C. Gerard felt that more dependence must be placed on the previous history and the physician's familiarity with the patient than anything else, the difficulty in diagnosis being particularly prominent in cases from which no history can be elicited and a physical examnation will not be permitted, which is frequently the case in those who are illegitimately pregnant.

Dr. William L. Pepper referred to a case in which the patient had a bloody discharge during the early months of pregnancy and miscarriage was feared. She subsequently menstruated during the pregnancy and a healthy boy was born at the end of nine months. He also stated that he had frequently noticed that in women in whom the sexual desire is very great before pregnancy begins, will lose all desire for it during gestation, while in those in which the sexual desire is not usually so great, will become abnormally sexually excited during pregnancy.

Dr. J. Edward Wallis felt that there were no sufficient signs to make a positive diagnosis until the end of the third month, although of course amenorrhea and morning sickness may be present.

Dr. L. C. Peter emphasized the fact of the difficulty in making the diagnosis in those patients suffering from a chronic debilitating disease and reported the case of a woman who was suffering from what he believed to be Addison's disease, who had been married seven years and had had no offspring. She presented all the subjective signs of pregnancy, although nothing could be felt on physical examination. Subsequent events proved that she was not pregnant, although she afterward became so and fifteen months later gave birth to a child.

Dr. Hugh P. McAniff reported the case of a woman who was suffering from gastric ulcer and tuberculous disease and, notwithstanding the anemia and her true physical condition, subsequently became pregnant, after which the lung trouble cleared up. The sputum had been previously examined and tubercle bacilli found, but they could not be discovered after the pregnancy.

Dr. W. H. Thomas reported the case of an Irish woman whom he had attended in five confinements. During the second pregnancy she had more or less show each month throughout the entire period, lasting from two to six days, while in the other four pregnancies, amenorrhea existed. During the intervals between her pregnancies her menstrual periods would last from five to six days, sometimes necessitating going to bed.

Dr. Carle Lee Felt reported the case of a woman who had borne three children, examination after the birth of the third child, revealing laceration of the cervix. A curettement was done, and a short time afterward, she stated to her physician that she was two months pregnant. Seven months after this she was delivered of a full term child which proved that she must have been pregnant at the time of the operation.

Dr. J. S. Gurney Williams, in closing, stated that he had made a number of observations with the urine of pregnant patients and had found that after the first twenty-four or forty-eight hours a skin-like substance would form on the top of the urine and, if it was held up to the light, particles could be seen rising therefrom. This he had not observed in any urine except in cases of pregnancy. The history and symptoms he believed to be practically worthless, except they were borne out by the examination. Pinkish vaginal discoloration just posterior to the urethra was mentioned as a sign of considerable value.

The vaginal incision in ectopic pregnancy was not recommended, as in the majority of cases this necessitates two incisions in order to control the hemorrhage.

## SOCIETY OF ALUMNI OF BELLEVUE HOSPITAL.

*Meeting of April 1, 1903.*

The President, Robert T. Morris, M.D., in the Chair.

**Rabies.**—Dr. H. D. Gill presented this paper. He said that there were still many who believed that hydrophobia was not a specific disease, though one might just as well say that smallpox could arise spontaneously and be contracted by healthy persons. For years we had been led to believe that rabies was quite rare, yet during 1902 twenty cases had come under his own observation, and from personal conversation with six other veterinarians who cared for dogs he learned that each of them had had about a dozen cases in the past year. There were two forms of the disease, as seen in the dog, the furious and the dumb. The duration of the first stage was from twelve hours to two days, during which time the animal showed changes in conduct. Soon the appetite became poor and likewise perverted. The second stage, or that of irritation, lasted four days, and was characterized by spasmodic attacks of madness. The animals then showed a great inclination to bite and appeared to be devoid of fear. In the third or paralytic period the animal presented a sullen expression and the gait was staggering. Death occurred from the fifth to the eighth day as a result of cerebral paresis. The most characteristic symptom of dumb rabies was the drop of the lower jaw. The lower jaw being paralyzed the dog could not bite even if it had any desire to do so. Death usually occurred in from two to four days. The dumb form of rabies was very common, the owner bringing the dog to the veterinarian on the supposition that the animal had a bone in his throat. The animals were not afraid of water as was popularly supposed. One should beware of a dog who appeared dull, who was always on the move or was disposed to hide away, or who walked with the head down and barked at nothing. The ignorant methods employed by the Society for the Prevention of Cruelty to Animals were known to be responsible for the spread of rabies—indeed, the President of that society had for many years expressed the belief that there was no such thing as rabies, and that it was not necessary to enforce regulations against that disease. Medical authorities were of the opinion that rabies was an easily controllable disease. Two important measures were the destruction of worthless and vagrant dogs, and the efficient muzzling of the dogs who appeared in public places. It was stated by one authority that in Vienna rabies was entirely suppressed by eighteen months of stringent muzzling. Prior to 1885 hydrophobia had been very prevalent in London. A muzzling order was then enforced for a year and promptly suppressed the disease, but on rescinding this order deaths from hydrophobia again became frequent. The following measures were suggested by the reader of the paper: (1) The city dog handling should be placed under proper medical or veterinary supervision; (2) the muzzling of all dogs in infected areas should be enforced; (3) separate compartments should be provided in the wagons and at the pound for each dog; (4) safe and proper places should be provided for dogs suspected of rabies, and (5) every dog bitten by a rabid animal should be destroyed or should be quarantined for at least one year. (This paper will appear in full in the MEDICAL NEWS.)

**The Best Methods for the Prevention of Hydrophobia.**—Dr. Follen Cabot was the author of this paper. He said that few physicians ever saw a case of hydrophobia, and for that reason some were skeptical regarding its very existence. In the prevention of hydrophobia there were three lines of treatment, viz.: (1) Intelligent laws with regard to animals; (2) treatment of the injury by antiseptics and cauterization, and (3) the Pasteur method of producing immunity. The disease was not specially prevalent at any particular season of the year, and the laws for the control of the disease should be enforced throughout the whole year. He believed that at the present time it was advisable in this city to enforce the muzzling of dogs for six months, but not for a longer time. Dumb rabies was the type usually seen in this city to-day. If the bite were on the face it was most serious. The microorganism of rabies he believed to be fermentative in character, and after twenty-four hours, infected the system by way of the nerves and not by the blood. A wound not deeper than a pin-scratch might be the cause of infection. When there were wounds of the exposed parts the patient should be anesthetized, the wounds scrubbed with green soap as if for an operation, and then fuming nitric acid should be applied with a glass rod. The wounds should then be dressed surgically. This treatment should be done as early as possible, but he had shown by careful experiments that it was of value even as late as two days after the bite, and at the end of twenty-four hours would save as many as 90 per cent. of infected animals. The actual cautery was next best to the nitric acid. Nitrate of silver saved only 55 per cent. About 13 per cent. of infected animals who received no treatment did not develop the disease. He was of the opinion that the cauterization treatment just described if carried out thoroughly, and at an early stage, was even more effective than the Pasteur treatment. Guinea pigs were better animals than rabbits for inoculation experiments to establish the diagnosis because the former developed the disease more rapidly. The Pasteur treatment usually lasted from fifteen to twenty-one days, according to the position of the wound and the interval elapsing between the time of the injury and the time of beginning the treatment. Children appeared to be more susceptible to the disease, though perhaps this was because they were more apt to be bitten on the face. In case the disease developed hope should never be given up because exceptionally recovery took place. Chloral and morphine were the best drugs to control the sufferings of the patient. (This paper will appear in full in the MEDICAL NEWS.)

Dr. R. J. Wilson reported a case which very closely simulated hydrophobia, although it was not really a case of that disease. A man, about thirty years old, was admitted to Roosevelt Hospital about three years ago, having been picked up in the street in the early morning while in "spasms." When placed in the ambulance he turned over and began to bite the pillow, and at short intervals gave a sharp bark. He said that he had been bitten by a stray animal a short time before. The diagnosis of hydrophobia was made at the time of admission to the hospital, and this diagnosis was considered to be probably correct by many of the physicians who saw the man. When seen by the speaker he was struck by the fact that the man's eyes showed intelligence rather than the vacant look usually present in hydrophobia. Nevertheless, the man presented the usual symptoms of the disease, such as spasm of the larynx, extending to the chest and ending in opisthotonos. It was found that a man answering this one's description had shortly before been an inmate of the Manhattan State Hospital for the Insane, and when suddenly told that he was crazy he was greatly surprised and talked for several minutes continuously forgetting all about his spasms. Up to that time he had developed spasms every time he had attempted to drink water, but at this critical moment he swallowed water without difficulty. The man was proved to be crazy, and not a victim of hydrophobia. One of the medical students made the statements that this could not be hydrophobia because the mouth was dry instead of saliva dribbling freely from the mouth. Two months later, Dr. Wilson said he saw a case that was proved beyond all question to be genuine hydrophobia, and yet the mouth was dry and the tongue fissured.

Dr. William H. Park emphasized the fact that cauterization prevented infection in most cases, but not in all, and that the same was true of the Pasteur treatment. The cases least likely to be favorably influenced were those in which the face had been bitten. The prompt and thorough use of cauterization would usually retard the spread of the infection through the nervous system sufficiently to allow of the successful application of the Pasteur treatment. The latter had been applied to animals and had proved exceedingly useful. As in the sad case recently occurring in this city, the wound was on the face, the infection reached the nervous system before the Pasteur treatment could be used. Experiment had shown that one-ten-millionth of a cubic centimeter of the brain or spinal cord would cause infection in other animals when inserted into the brain. It should always be borne in mind that even in the very slightest wound it was most important to wash off the virus. The deaths from rabies and from hydrophobia had not varied much in New York city for the past three years, though the infected areas had changed from time to time. There were on an average from six to nine deaths a year. There was no question about the great importance of having all dogs muzzled for a certain length of time.

Dr. Alexander Lambert spoke of the possible difficulties in diagnosis. Rabies began with restlessness, dread and fear of being disturbed. Tetanus developed with a malaise and beginning rigidity of the jaws or a stiffness of the wounded portion. It was interesting to learn that infection of rabies probably spread through the nervous system because this seemed to be the manner in which the tetanus poison spread to the brain. In the Southwest the people were much in dread of being bitten by skunks, as these bites often resulted in the development of hydrophobia in a period varying from eight weeks to three months. It was well to remember that even the free use of soap and water and scrubbing would save many from the disease. He firmly believed that the dogs of this city should be muzzled because the efficiency of this simple preventive measure was beyond all question. There should be a vigorous protest on the part of the medical profession in this city against the present method of allowing the ordinance with regard to muzzling to go unenforced.

Dr. N. E. Brill asked how Dr. Cabot had proved that cauterization within forty-eight hours destroyed the virus, and on what animals Dr. Park had demonstrated the fact that one-ten-millionth of a cubic centimeter of the virus was fatal.

Dr. Park replied that the guinea-pig was the animal used.

Dr. Cabot said that he had introduced the pure rabic virus into a wound in the animal, and had sewed up the wound for periods of twenty-four to forty-eight hours. The wound was then opened and various cauterizing agents employed. In this way it was found that nitric acid saved 91 per cent. of the animals, whereas when nothing of this kind was done all but 13 per cent. of the animals died of rabies. This latter percentage had remained quite constant throughout the series of experiments.

Dr. Brill, continuing, said that some years ago he had been especially interested in this topic, although skeptical regarding the then new Pasteur treatment. There were even now some doubts in his mind. The nature of the so-called virus was unknown, and it did not act like any other infection known to the human species. It had no known and fixed period of incubation, some cases developing the symptoms within a few days, and others not until three years afterward. If the infectious agent were a toxin it certainly did not act like the allied toxin of tetanus. In the latter disease there was, within reasonable limits, a fixed period of incubation. He did not mean to say that rabies did not exist, but it was an extremely rare disease. In 1891 he had been asked to perform an autopsy upon an animal who had been bitten by a supposedly rabid animal, and who developed symptoms three months after the bite. The man died in convulsions within four days. Some of the material was placed in bichloride and taken to the surgeon-general, and later the report was that this material had been inoculated into guinea-pigs and that they had all died of dumb rabies. If the infectious agent were fermentative the effect of the bichloride would have been different. Dr. Brill said he had experimented on dogs with some of the same material, but with unsatisfactory results. He had previously experimented with the dry glycerine extract on a healthy dog, also with soap and with decomposing urine. The skull was trephined and the material introduced under the dura. In rabbits the symptoms of dumb rabies were obtained. In dogs in which infection occurred the autopsy showed diffuse encephalitis and the symptoms were those of an active cerebral disturbance in which the dog became almost maniacal. Guinea-pigs were found to be peculiarly susceptible to any form of intradural injection. Paralytic symptoms and death followed the subdural injection of a substance like soap. These experiments had made him very skeptical with regard to the disease under discussion, and while he could not doubt its existence he found it utterly impossible to understand the phenomena recorded as a part of this disease. As soon as the cry of "mad dog" was raised there would be endemics of rabies immediately reported. Dulles, of Philadelphia, and a veterinarian in Minnesota had shown that a number of diseases in the lower animals had been mistaken for rabies, such as intestinal parasites, parasites of the brain and spinal and meningeal infections. In all of these cases the animals presented the classical symptoms of rabies. He could not, therefore, believe that this was a prevalent disease.

Dr. Wilson asked how soon the guinea-pig showed symptoms after the inoculation.

Dr. Brill replied in from four to five days.

Dr. S. E. Getty, of Yonkers, reported a case occurring in St. John's Hospital. On August 17, 1902, a child of five years was found with an incised wound running diagonally across the forehead and tip of the nose. The wound was cauterized and healed by first intention. At the time of admission on September 12, the boy was very irritable, and had a number of irregular convulsions. Later on it was stated that some persons had seen the child bitten by a dog. The child appeared bright but frightened; the pupils were unequal; respirations were rapid and shallow; the pulse was rapid. When offered fluid or when irritated in any way there was an irregular convulsive seizure with spasm of the muscles of deglutition. The urine was negative, and defecation was normal. The spasms recurred three or four times an hour. The temperature was 100.5° F., and by the morning of September 14 reached 104° F. The pulse varied from 122 to 140. Unfortunately the dog that had bitten the child had been killed before bringing the little one to the hospital. Two animals were inoculated with an emulsion of the spinal cord of the boy. One animal was found dead forty-eight hours later, death having occurred during the night. The second animal developed paralysis and convulsions, and died shortly afterward. No well-marked lesions of the brain or cord were found.

Dr. Frederick Holme Wiggin said that about thirteen years ago, while in the country, he had been called to see a boy of fifteen years, who was said to be dying of rabies. The boy had been bitten by a dog about six months previously, but had shown no symptoms until about a week before the time the speaker was summoned. The case attracted much attention, so that on reaching the house it was found to be crowded with people, and the boy the center of attraction. It was discovered that the boy's temperature was normal, and that he was shamming. The judicious use of tickling and slapping, together with a few plain words as to what might be expected next, sufficed to effect an immediate and complete cure.

Dr. Alexander Lambert asked Dr. Cabot if it were not true that the majority of guinea-pigs die of furious rabies when inoculated.

Dr. Cabot replied in the affirmative.

Dr. Lambert then remarked that if a guinea-pig exhibited dumb rabies he would doubt very much if the animal really had rabies.

Dr. Cabot said that syphilis might develop within a few weeks or not for several months, and in this respect furnished a counterpart to hydrophobia. In carrying on his work he had inoculated about 3,000 rabbits, carrying the disease from one to another. In every case the symptoms had been absolutely the same. After a period of six days the animal developed a tremor and a peculiar oscillation of the pupil, and in a day or two more the gait became staggering. In from twenty-four to forty-eight hours the animal became completely paralyzed, and death speedily ensued. The fact that the disease had a varying incubation period simply meant to him that the mode of entrance of the virus was different. The Pasteur treatment was carried on in about half a dozen places in this country. The injections were rather painful for about ten minutes, probably largely owing to pressure upon the nerve terminations. He had never seen any bad symptoms from the treatment out of 175 cases, so that it was safe to say that there was no danger in this treatment. The shortest authentic incubation period in hydrophobia was twelve days; the shortest he had personally observed was seventeen days, while the average was five weeks to three months. The longest authentic period was six months. The symptoms were quite typical. Three or four days before the constitutional symptoms appeared the infected wound became swollen and sensitive. The next thing noted was a slight difficulty in swallowing or a falling off of the appetite. After this there was apt to be some restlessness or nervousness. Then the eye assumed a typical appearance; the pupil became dilated and the expression of the eye was similar to that observed in typhoid fever. The patient soon became extremely irritable, so that he would jump up or shriek out at the slightest sound or even at a current of air. As the difficulty in swallowing increased, the patient was apt to use a handkerchief frequently to wipe off the saliva, not necessarily because of an increase in the quantity of saliva but because of the difficulty in swallowing it. As the disease progressed, the accumulation of tenacious mucus was apt to cause difficult and somewhat noisy breathing, and these sometimes caused a sudden and peculiarly hoarse cry, which was popularly described as a "bark." The spasms gradually became more and more frequent, affecting the spinal muscles and the diaphragm, the pulse and temperature increasing and, after an interval of from three to eight days from the onset of the acute symptoms, death supervened from exhaustion or in convulsions. As a rule, the mind was clear to the last; there was no effort to bite or become violent, and the patient only complained bitterly of his sufferings. Anesthetics should be given, or chloral by the rectum. Dr. Cabot said that in these cases the urine should be examined. Albuminuria was almost invariably present. Two weeks must elapse after the completion of the Pasteur treatment before the full protection afforded by that treatment was obtained—in other words, if there was a period of about five weeks in which to secure immunity the development of the disease was highly improbable.

Dr. Park said that undoubtedly many cases of hysteria were thought to be hydrophobia, nevertheless the latter occurred occasionally at the present time, about seven times a year among three million people. After having watched so many animals in the laboratory infected with rabies it seemed to him impossible that any one could believe that the symptoms so regularly developed by these animals were due to toxic matter other than the virus of rabies. Moreover, dogs very often presented the typical symptoms of the disease known as rabies, and yet they did not suffer from hysteria.

Dr. Brill said that he had been entirely misunderstood, for, he had distinctly stated his belief in the existence of rabies, and that it was prevalent among certain of the lower animals. The symptoms of the disease in a guinea-pig and in a rabbit, as formerly described by Roux and others, were identical. He did not believe that the cases of rabies in man were by any means as frequent as reported.

Dr. Gill said that Dr. Cabot had made the statement that rabies was no more prevalent now than it was some time ago. He would say in this connection that many cases of dumb rabies were harmless, exhibiting no tendency to bite, and appearing in an early stage to be quite rational. The only cases reaching the laboratory were those which had bitten some human being; hence the veterinarians saw a great many more cases of rabies than would appear to exist from the laboratory statistics.

Dr. Robert T. Morris said that some years ago he had been asked to see a person supposed to be suffering from hydrophobia, and he had found conditions very similar to those so graphically described by Dr. Wiggin. The patient, a boy, had been bitten by a dog five or six months previously, and the animal was still alive. The boy was apparently semiconscious, and would occasionally growl and snap at anything passed before his face—in short, presented the "newspaper symptoms" of rabies. He had been in this condition for several days in spite of large doses of morphine and chloral. Dr. Morris said that he became convinced that the condition was the result of suggestion, and that it could be relieved in the same manner, and by following out this line of treatment the boy was well on the road to recovery in a day or two. There was no question that many of these persons died, and perhaps largely because no surgeon was called in to cut off the drugs. The negative testimony presented by Dr. Brill was very interesting, and should be carefully collated, studied and given its true value.

Dr. Gill, in closing the discussion, said that veterinarians noticed that when a dog from one locality became infected with rabies they usually saw several other similar cases from the same locality. He had watched some experiments made nearly twenty years ago by Dr. Spitzka on the introduction of various substances beneath the dura mater in dogs, and, as a result, both he and the experimenter had lost their skepticism regarding rabies. The chief object of his paper this evening was to present the great need of proper control of dogs.

## BOOK REVIEW

PHYSIOLOGY. A Manual for Students and Practitioners. By THEODORE C. GUENTHER, M.D., Assistant Physician and Chief of the Medical Clinic, Norwegian Hospital, Brooklyn, and AUGUSTUS E. GUENTHER, B.S., formerly assistant in Physiology in the Medical Department, University of Michigan, Medical Epitome Series. Edited by V. C. PEDERSEN, A.M., M.D. Illustrated with fifty-seven engravings. Lea Brothers & Co., Philadelphia and New York.

THIS the first volume of the new Medical Epitome Series, is the most readable "condensed" physiology that we have seen. Though condensed, it is not in any sense "elementary," such a phrase, for example, as "the streaming phenomena in plant-cells and in the pseudopodia of rhizopods," without explanation, implying either previous biological study, or attendance in the physiology lecture-room. The arrangement in sections on secretion, absorption, reproduction, etc., is that of the larger works, and an appendix gives the metric system and the more common chemical tests in physiological analysis. That "oxygen, being absolutely essential to the continued existence of life, is in this sense a food" may be true, but that should scarcely entitle it to a place in a list of food-stuffs under the heading "Digestion." Among the theories of the nature of protoplasm, Bütschli's foam theory is the only one mentioned. A pocket manual on a scientific subject like physiology can never replace the regular textbooks, because for brevity's sake its statements must be dogmatic and therefore contrary to the spirit of scientific study. Yet by a rapid perusal of these pages, a practitioner whose knowledge of physiology has become rusty, may burnish it up to a considerable degree. The style of the book is a credit to the publishers, the illustrations are chosen with good judgment, and a very full review-series of questions is placed at the end of each chapter.

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## ORIGINAL ARTICLES.

### INDICATIONS FOR EXTIRPATION OF THE GALL-BLADDER.*

BY MAURICE H. RICHARDSON, M.D.,
OF BOSTON;
VISITING SURGEON, MASSACHUSETTS GENERAL HOSPITAL.

THE so-called ideal operation upon the gall-bladder, by which that viscus is immediately closed after the removal of gall-stones, seemed, when first proposed, an effectual and permanent method, making the tedious process of drainage unnecessary and the firm closure of the abdominal incision possible. It was, however, soon demonstrated by the most experienced observers that the essential thing in most if not in all biliary affections is drainage of the biliary passages. When, furthermore, it appeared that immediate closure of the gall-bladder might be followed by grave disaster, ideal cholecystotomy was regarded first with suspicion, and finally with well-merited disapproval. Indeed, the operation has no longer any place in the surgery of the gall-bladder.

In the beginning of one's experience in the surgical treatment of gall-stones removal of the gall-bladder by destroying at a single blow the *fons et origo mali* seems a very efficacious and satisfactory procedure. As one's experience broadens, however, it is seen that in reality removal of the gall-bladder is an operation which has distinct limitations; that, no matter how advantageous this operation may be in theory, in practice it has disadvantages, immediate and remote, which require careful consideration.

At the present time observers differ widely as to the best methods of procedure in these biliary affections which involve, directly or indirectly, the gall-bladder. Some whose opinions I respect very highly have advocated extirpation of the offending gall-bladder as a routine operation, just as they would advise extirpation of the appendix; but I have reserved the operation of cholecystectomy for cases in which the gall-bladder has in itself attributes which sooner or later threaten life. I may, however, in time become convinced that in all cases of gall-stone disease the best treatment will be to remove the gall-bladder with the gall-stones. At present, for reasons which I shall give in detail, my tendency, though perhaps on the whole toward more frequent resort to cholecystectomy, is decidedly against the universal application of that remedy. The analogy between the gall-bladder and the appendix is not complete: the one has a definite and evident physiological purpose; the other, if it has a physiological function, has one that is neither evident nor definite. The one is a receptacle for an aseptic secretion; the other contains material which, normal or abnormal, is highly septic and infectious. The one can serve a useful physiological purpose after being operated upon; the other cannot. The one permits operations upon itself of great benefit to communicating structures; the other permits no operation upon itself except total destruction. The one is seldom in itself suddenly menacing to life; the other is frequently so.

Feeling considerable uncertainty as to the best method of procedure under varying conditions of disease affecting the biliary apparatus, I have undertaken to present the arguments, based upon theory and upon experience, which now influence my decision whenever the question of extirpating a gall-bladder arises. I have no doubt that within the next few years the accumulated experience —which undoubtedly will be great, now that the advisability of operating early upon offending gall-stones is generally admitted—will have led to as well-defined opinions as those of the past few years in reference to the treatment of the offending appendix. No satisfactory decision of the questions relating to extirpation or non-extirpation of the gall-bladder can be reached until we know, by the lapse of sufficient time, the comparative late effects of both. The end-results in simple cholecystotomy are certainly as gratifying as end-results have ever been in any class of abdominal operations. The remote effects of cholecystectomy must indeed be extraordinary to improve upon those of cholecystotomy.

*Advantages of Cholecystectomy.*—(*a*) The wound heals immediately, and the liability to hernia is therefore slight; (*b*) there is no possibility of gall-stones forming in the gall-bladder; (*c*) there is no possibility of a subsequent cholecystitis; (*d*) there is no possibility of malignant growths starting in the gall-bladder; (*e*) the formation of adhesions is reduced to a minimum.

*Disadvantages of Cholecystectomy.*—(*a*) There is no possibility of draining the biliary passages, except through one of the ducts, and that only after a difficult and unsatisfactory operation; (*b*) there is greater danger in the operation; (*c*) re-drainage of the biliary passages is extremely difficult and dangerous.

*Advantages.*—(*a*) *The wound heals immediately, and the liability to hernia is therefore slight.* —The tendency to hernia in wounds high up in the abdomen is less than in those of the lower half. I have seen, however, very large hernias in the abdominal scar after cholecystotomy and drainage. The liability to hernia is greater when the drain is left at the lower angle of the wound than when it is left at the upper angle or in the center; it is less when the cut is made through the rectus than when it is made across the oblique muscles. In all operations, even when the gall-bladder is extirpated, I use a gauze wick for two or three days. Strictly speaking, therefore, the wound is not immediately closed. Nor, in fact, is it completely closed, for I use no buried suture at the upper angle. The wound, nevertheless, closes practically by first intention after aseptic cholecystectomy, and hernia is decidedly infrequent. In other words, the tendency to hernia is reduced to a minimum.

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* Read at the Meeting of the Southern Surgical and Gynecological Association, at Cincinnati, Nov., 1902.

If it were safe to close the abdominal wound after cholecystectomy, then immediate closure, with every possible precaution against hernia, might be practised. Unfortunately, bile frequently escapes from the depths of the wound, even if the cystic duct has been isolated and tied. A drain, preferably of gauze wrapped in rubber pellicle or tissue, is essential; for there is no telling when there may be an escape of bile from the pedicle of the gall-bladder.

(*b*) *There is no possibility of gall-stones forming in the gall-bladder.*—That there is no possibility of the re-formation of gall-stones after cholecystectomy cannot be maintained. Nevertheless, the formation of gall-stones elsewhere than in the gall-bladder itself is extremely unusual. In the cases in which no stones are found except in the common duct, the original source of the stones is, of course, uncertain, though a history of gall-stone colic without jaundice, preceding the jaundice of final impaction, indicates the gall-bladder as the seat of origin.

Two cases have recently come under my care which illustrate the possibilities of gall-stone formation in the hepatic duct. In the first case the gall-bladder, the cystic, the hepatic, and the common duct were enormously distended with gall-stones—three hundred in number. The gall-bladder and the cystic duct were emptied through the fundus; the common and hepatic through the common duct. The common and hepatic ducts were as large as the gall-bladder. Gall-stones were removed from the hepatic duct as far as the instruments could be inserted. All were, we supposed, removed. Drainage was made through the gall-bladder, the wound in the common duct being securely and successfully sutured. The patient, after a stormy convalescence, during which 150 gall-stones were discharged through the gall-bladder, made a good recovery.

In another case I removed three gall-stones, two of which were in the common duct and one high up in the hepatic. This patient had been operated upon six months previously by another surgeon, who drained the gall-bladder for cholecystitis, but found no stones. The patient had been jaundiced off and on for two years, with typical attacks of gall-stone colic. In this case the gall-stones probably formed in the gall-bladder, and were retained in the common duct. The impaction of one stone was followed by dilatation of the common and hepatic ducts, where the two other stones had room enough to pass upward into the liver or downward until they touched the impacted stone.

As the chief etiological factor in the production of gall-stones are micro-organisms, upon which or upon the products of which biliary salts are deposited, it is reasonable to conclude that where infections exist gall-stones may form. It is only in the gall-bladder, however, that infectious products remain long enough for the deposit of cholesterin and lime salts. They stagnate there, and permit the deposit of solid material. In the biliary stream of the hepatic ducts these products do not remain long enough to permit the formation of stones, unless diverticula exist in which the bile remains motionless long enough to allow the nucleus of a stone to form. Even then the constantly increasing diameter of the hepatic radicles offers no obstruction to the disentanglement and the floating away of the small calculus. There is every reason, in theory and in practice, for thinking that the hepatic and the common ducts are but rarely the seat of origin in gall-stones.

It may be assumed, therefore, that practically all gall-stones are formed in the gall-bladder; and that, once the gall-bladder has been removed, the chance of re-formation is extremely small. But is not the chance of re-formation in the gall-bladder after drainage extremely small? It certainly is small—just how small it would be hard to say. Assuming that the etiology of gall-stones requires first an infection of bile, the probability of re-formation would be less than in the first instance; for a second infection would require a fresh source of micro-organisms, and, moreover, there would be fewer years of life in which to incur that infection. On the chances, a second cholelithiasis would be highly improbable. In the patients operated upon for gall-stones by cholecystotomy and drainage the subsequent history has been one of freedom from pain and other evidence of gall-stones. In the one or two cases in which there have been attacks of pain suggesting gall-stones, the gall-bladder had been opened and immediately closed—there had been no drainage of the biliary passages. The great advantage of drainage is the thorough cleansing of the biliary passages of all abnormal elements which might serve as nuclei for the deposit of biliary salts. And yet it seems not unreasonable to suppose that, in the gradual closure of the gall-bladder opening, some at least of these abnormal elements must at the last moment be retained in the gall-bladder and be gotten rid of through the normal channels.

Practical experience goes to show that the recurrence of gall-stones after cholecystotomy is very unusual, unless ligatures or sutures remaining in the gall-bladder wall are cast off into the gall-bladder. I have heard of but one such case —that reported by the late Dr. Homans.

Whatever may be the possibility of gall-stone formation in the hepatic radicles, there is certainly none in the usual nidus of gall-stones—the gall-bladder—after removal of that viscus.

(*c*) *There is no possibility of a subsequent cholecystitis.*—This is a distinct advantage in cholecystectomy. The occurrence of infections after the removal of stones, and drainage, must be admitted. In some instances it becomes necessary to drain a second time. I have never found fresh gall-stones at the second operation, though I have in several instances found a stone impacted in the cystic duct. In several of my operations for cholecystitis (See *American Journal of the Medical Sciences,* June, 1898) the patient's condition was too serious to permit more than the briefest possible manipulations for drainage. Experience since the publication of that paper has convinced me that gall-stones are almost invariably the exciting cause of cholecystitis, and that careful search for gall-stones will usually result in their detection. Reinfections of a gall-bladder which was not at the time of operation in an infected condition is extremely unusual. If reinfections do occur in any considerable number of cases, it must be only a question of time when gall-stones will re-form.

The remote results after drainage of an infected gall-bladder are brilliant, even if the gall-bladder has been the seat of repeated infections. The prolonged drainage of infected gall-bladders, usually made necessary in the process of closure, seems, with the removal of gall-stones and the products of germ life, to produce not only a complete restoration of the gall-bladder to the normal, but to exert a permanent curative influence. It would, nevertheless, seem contrary to common sense that an inflamed gall-bladder, perhaps thickened and more or less contracted, should be made by drainage as free from the danger of renewed infections as the normal or the comparatively normal gall-bladder. It is the danger of these subsequent possibilities of acute gall-bladder disease which inclines me toward a total extirpation when in doubt.

(*d*) *There is no possibility of malignant growths starting in the gall-bladder.*—The irritation of gall-stones, or of chronic inflammations dependent upon or accompanying gall-stones, is undoubtedly a prolific source of malignant disease of the gall-bladder, the frequency of which is well known. This danger is a distinct and favorable indication for cholecystectomy whenever there is evidence at the time of operation that extensive inflammatory changes, unlikely to subside under drainage, have already taken place. Whenever a gall-bladder presents the least evidence of a new growth it should be removed; when it is so thickened and contracted as to make complete recovery under drainage unlikely it should also be removed.

(*e*) *The formation of adhesions is reduced to a minimum.*—Permanent fixation of the gall-bladder to the abdominal wall is sure to follow whenever suturing of the fundus is one of the steps of cholecystotomy. Various unpleasant sensations have been attributed to this cause. Chief among these discomforts has been a sensation of pulling or dragging. My experience has been, almost without exception, that no such results follow fixation of the gall-bladder. All my earlier operations were performed by suturing the gall-bladder to the edges of the abdominal wound. Of late years I have given up suturing entirely. Drainage is accomplished and maintained by fastening a large rubber drainage tube into the gall-bladder by means of a purse-string suture of silk. This method proves satisfactory, and is chosen because it is more rapid and it prevents absolutely the escape of bile, either into the abdomen, the wound, or the dressing.

Whatever method of cholecystotomy is used, adhesion of the fundus to the abdominal wall, or near it, is sure to follow. Moreover, adhesions to surrounding viscera are almost sure to form. I have operated a second time in quite a number of cases of cholecystotomy and I have found, as a rule, the gall-bladder adherent. In a great many cases of gall-stones the gall-bladder is found at the first operation everywhere adherent. Separation of these adhesions is always followed by renewed adhesions, and yet the adhesion in itself is as a rule productive of no discomfort, as far as the gall-bladder is concerned. It is true that adhesions to the pylorus and duodenum may at times seriously interfere with digestion; but adhesions of gall-bladder *per se* seldom cause discomfort.

Extirpation of the gall-bladder will be followed by adhesions, but by adhesions much less extensive than adhesions to the gall-bladder. This advantage for cholecystectomy is an advantage, but one of little weight.

*Disadvantages.*—(*a*) *There is no possibility of draining the biliary passages except through one of the ducts, and that only after a difficult and usually an unsatisfactory operation.*—After removal of the gall-bladder, drainage of the biliary passages is possible only through the open end of the cystic duct left after cutting away the gall-bladder, or through an opening in the hepatic or the common duct. The hepatic duct, in the normal condition, is too small for the use of any but the smallest drainage tubes. Drainage up to the abdominal wound by means of gauze strands is too dangerous and uncertain. Search for the common duct is difficult and often dangerous. Moreover, the insertion of a tube into the common duct undilated is difficult and unsatisfactory. The chance of causing stricture or even obliteration is enough to condemn it. When the ducts are dilated, drainage may be easy. I have seen a cystic and an hepatic duct large enough to admit the forefinger and therefore a satisfactory tube. The common duct I have seen as large as a gall-bladder. Drainage in such cases is, as I say, easy and satisfactory; but the cases themselves are extremely unusual, and they are, moreover, always associated with a permanent impaction of the common duct, with jaundice.

In the difficulties of immediate drainage lies the chief objection to cholecystectomy. In my experience this question is the essence of the whole discussion: for enforced and persistent drainage is one of the chief factors in bringing about the brilliant permanent results seen after cholecystotomy. By drainage the biliary passages are immediately relieved of all abnormal contents. The biliary discharges undergo in the course of drainage changes in physical appearances that are extraordinary. The beneficial effects of these changes are seen not only in the liver, but in the pancreas. Indeed, I have known a tumor of the pancreas large enough to be felt through the abdominal wall to disappear entirely under a few weeks' drainage through the gall-bladder; while the symptoms caused by this conditions subsided completely and permanently. In three recent instances simple drainage through the gall-bladder was effectual in causing the rapid disappearance of jaundice dependent upon an enlarged pancreas, which enlargement itself quickly subsided.

Drainage is, in most biliary affections, not only an advantage, but an absolute necessity. When, therefore, it is proposed to remove the gall-bladder, it is proposed to dispense with what is in my opinion an essential feature of the majority of cases of biliary surgery.

(*b*) *There is greater danger in the operation.*—This proposition is one of the self-evident truths that would not justify repetition were it not said so frequently that the operation is an easy as well as a safe one. Cholecystectomy may be extremely easy. So may hysterectomy be easy; but, in an easy hysterectomy, wounding of the ureters is also easy. Indeed, the easier and quicker the hysterectomy, the larger the proportion of cut and tied ureters. So in cholecystectomy, facility and rapidity may lead to hemorrhage, to wounds of duodenum or of colon, and even to ligation of common or hepatic duct. Cholecystectomy is not always an easy operation; nor is it always a safe operation. It has possibilities of difficulty and of danger which should be strongly emphasized. Hemorrhage from the denuded liver is in itself at times a very formidable complication, and one that will tax the operator to control. The gall-bladder at its neck is in close relation with structures of the first importance. Even when the anatomy is normal, isolation of the cystic duct may be at times difficult, even in the hands of a skilled anatomist. When the parts above the Foramen of Winslow are buried in inflammatory masses, isolation of the cystic duct may be practically impossible. The operator will be blindly cutting in close proximity to portal vein, inferior cava, or duodenum, the appearances of which will be unrecognizable and the relations indistinguishable. It may even be necessary, in extirpation of the gall-bladder, to resort to Mayo's device of stripping out the mucous membrane—as at times it is necessary to do in similar conditions of the appendix.

(*c*) *Redrainage of the biliary passages is extremely difficult and dangerous.*—The difficulty of draining in the future, after cholecystectomy, seems an important consideration, especially when it is proposed to remove the gall-bladder in all operations for gall-stones.

It is doubtless true that by removing the gall-bladder the chances of gall-stone cholecystitis, or other conditions requiring drainage, are enormously diminished. But nevertheless conditions may arise in which drainage will become necessary. What can be done in the future, if drainage is imperative and there is no gall-bladder? It will become necessary to drain through the common or the hepatic duct, which must themselves be isolated and opened in the depths of a region presumably buried in adhesions of long standing. Such an operation is possible, but it must be regarded as one of the greatest difficulty and danger.

*Conclusions.*—1. Certain lesions in themselves demand removal of the gall-bladder whenever possible. Such are new growths and gangrenes.

2. Certain other lesions of the gall-bladder are better treated by cholecystectomy. These are the contracted and inflamed gall-bladders, with thickened walls. All gall-bladders which do not permit easy and efficient drainage should be extirpated, for in such gall-bladders the risks of drainage are quite as great as the risks of extirpation; and the one great advantage of retention is impossible—retention of the biliary reservoir to fulfil the functions of that reservoir, and to permit, if necessary, renewed drainage in future years.

3. Drainage is preferable in the dilated and infected gall-bladder, which, however, is neither gangrenous nor to any great extent changed—the slightly thickened gall-bladder containing gall-stones and infected bile. This gall-bladder will, after drainage, become normal, and therefore capable of fulfilling the functions of a gall-bladder. Through it the biliary passages will become effectually drained, after subsidence of the temporary swelling about the cystic duct.

4. As a rule drainage rather than extirpation is demanded in acute cholecystitis with severe constitutionel symptoms, when the gall-bladder is dilated, or at least not contracted, and when it is not gangrenous.

5. In chronic cholecystitis, with dilatation and thickening of the gall-bladder, especially when a stone is impacted in the cystic duct, extirpation is the preferable operation, unless the stone can be dislodged backward into the gall-bladder, in which case drainage is, if not preferable, quite as advantageous as extirpation.

6. In simple gall-stones, without visible evidence of infection or chronic changes incompatible with complete restoration of function, simple drainage of the gall-bladder is indicated.

7. In chronic pancreatitis, whether associated with gall-stones or not, drainage through the gall-bladder is indicated. Cholecystectomy is unjustifiable, for immediate drainage is essential. Furthermore, reopening of the biliary passages may in the future be required.

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**Bostwick Drug Bill Passed.**—The Bostwick bill, amending the Penal Code relative to the sale of drugs and requiring that drugs sold shall be exactly what they are advertised or announced to be, was passed by the Senate last week by a vote of 27 to 3. This bill, if signed by the Governor, will prove, we believe, a very efficient bit of legislation.

# SOME PRACTICAL POINTS IN THE ANATOMY OF THE GALL-BLADDER REGION.

BY GEORGE EMERSON BREWER, M.D.,
OF NEW YORK;
JUNIOR ATTENDING SURGEON, ROOSEVELT HOSPITAL, NEW YORK.

IN accepting the invitation of the President of the Academy to present this evening a paper on the surgical anatomy of the gall-bladder and ducts, I did so with a considerable degree of hesitation. This was due to the fact that the subject has already received considerable attention from others, more experienced than myself, from the fact that my own views upon the subject derived from a number of dissections made in 1887, 1888, and 1899 at the anatomical laboratory of Columbia University, have already been presented in a volume of "Contribution to the Science of Medicine" by the pupils of Prof. William H. Welch; and also from the fact that since the publication of that paper I have had practically no opportunity of carrying out further anatomical studies. The present communication will therefore be limited to a few practical points gleaned partly from the work of other investigators and partly from my own. I must crave the indulgence of my audience if in presenting the results of my own investigations, I quote liberally from my previous paper. I feel that I may ask this privilege for the reason that my paper in its completed form was never presented before any medical society.

The important points in the anatomy of this region for the surgeon are: (1) A knowledge of the position of the nerve trunks of the abdominal wall; (2) a knowledge of the normal position, size, shape and relations of the gall bladder and ducts, their blood supply, and the normal position of certain constant lymph nodes; (3) the most frequent variations from the normal in these structures, both congenital and acquired; (4) variations in the arrangement of the blood supply of the liver and gall-bladder; (5) the relations of the duodenal orifice of the common bile duct; (6) the anatomy of the infrahepatic peritoneal basin.

*External Landmarks.*—In order to preserve the integrity and muscular tone of the abdominal wall after operation, the incision, when made in a region other than the median line, should be so planned as to avoid dividing the lower intercostal nerves, which supply the abdominal muscles. These nerves, as is well known, emerge from the intercostal spaces and pass downward and forward toward the median line, lying between the internal oblique and transversalis muscles, until their terminal branches pierce the sheath of the rectus muscle, which they supply. In order to determine with a fair amount of accuracy the relative positions of these nerve-fibers, the writer made a number of dissections.

The first of these dissections was made by my prosector, Mr. Philip Van Ingen, of the College of Physicians and Surgeons. The subject was specially prepared by being injected with formalin (10 per cent.) to harden the tissues and to render variations in the normal relations of the muscles and nerve-trunks to the bony landmarks improbable.

The results of this dissection were carefully noted, and afterwards verified, on about one dozen other subjects, and although the writer is aware that these observations would be rendered entirely valueless by certain conditions, such as great abdominal distention, obesity, or deformities from spinal disease, yet the results are given for what they are worth.

It was found that the course of the twelfth dorsal nerve would be accurately indicated by a line drawn from a point one cm. below the tip of the twelfth rib to the spine of the pubic on the opposite side; that the position of the eleventh dorsal nerve would be indicated by a similar line drawn from a point one cm. below the tip of the eleventh rib to the middle of Poupart's ligament on the opposite side; that of the tenth dorsal nerve from a point one cm. above the tip of the eleventh rib to the anterior superior spinous process of the opposite ilium; that the course of the ninth nerve would be indicated by a line drawn from a point just below the osteochondral junction of the ninth rib, horizontally toward the median line. That the eighth intercostal nerve would follow a line drawn from a point immediately underneath the costal origin of the eighth cartilage, passing horizontally inward to a point one cm. to the inner side of the chondral border, then upward, parallel with that cartilage, to a point near its junction with the sternum, lying throughout its entire length about one cm. to the median side of its inner margin. Each of these nerves, as it approaches the sheath of the rectus, divides into two branches, one continuing in the course of the line indicating its general direction, while the other passes transversely inward, or inward and upward, and enters the sheath, from one to three cm. above its fellow. It will thus be seen that any incision which exposes the gall-bladder and ducts sufficiently to carry on any operative procedure, must necessarily divide one or more of these nerve-trunks. If, however, we employ the straight incision through the rectus muscle near its outer border, extending from a point one cm. below the free border of the eighth costal cartilage to a point five cm. above the umbilicus, or the curved incision, parallel to the free border of the costal cartilages, extending from a point just below and outside of the ensiform cartilage, and carried downward and outward to a point above the emergence of the tenth nerve, only one—the ninth intercostal nerve—need be divided.

Either of the incisions will give sufficient room for operations on the gall-bladder, but if it is necessary to expose the ducts or duodenum, they will generally be found inadequate; for this purpose the S-shaped incision suggested by Bevan is to be preferred. This consists in an oblique or curved extension toward the median line of the upper extremity of the straight incision and a curved extension outward of its lower extremity.

Regarding the normal anatomy of the gall-bladder and ducts, it may be stated that the gall-bladder is a pear-shaped, musculomembranous pouch, situated on the under surface of the liver, occupying a position in the fissure between the right and quadrate lobes, the fundus lying anteriorly and projecting for a short distance beyond the free margin of the liver immediately behind the cartilage of the ninth rib, its neck assuming a double curve similar to the letter S, gradually becoming narrower until it merges into the cystic duct. The point of junction with the duct lying near the right extremity of the transverse fissure of the liver, between the two folds of the gastrohepatic omentum.

The interior of the gall-bladder is lined with a reticulated mucous membrane. In its lower portion, near the beginning of the lower arm of the S-shaped curve, Hartmann describes a large semilunar fold, attached for two-thirds of the circumference of the wall, the center of attachment being on the right. Beneath this, arising from the left side or promontory, at the upper arm of the curve, is another but somewhat smaller membranous valve. Between these two valves is a space called by Hartmann *"le bassinet de la vesicule,"* or the pelvis of the gall-bladder. The origin of the cystic duct is just below this second fold.

From one hundred measurements of the gall-bladder made by the writer, nine might be classed as small, measuring 6 cm. or less, while twelve were large, measuring 12 cm. The length of the remaining seventy-nine was between 6 cm. and 12 cm., the average length being 10 cm.

From the inferior extremity of the gall-bladder the cystic duct passes inward for about 3 cm., lying between the folds of the gastrohepatic omentum. Here it joins the common hepatic duct and forms the ductus communis choledochus, the general direction of which is downward and inward, behind and to the inner side of the duodenum, to its junction with the canal of Wirsung in the head of the pancreas, both ducts opening into the ampulla of Vater, situated in the wall of the duodenum, which in turn communicates with the interior of the duodenum by a small opening on the summit of the biliary papilla. The mucous membrane of the cystic duct contains a series of semilunar folds or valves of Heuster, the upper two or three of which are fairly constant. Below this point the arrangement is exceedingly irregular.

Soemmering states that the number of these folds varies between 4 and 20. Henle, Tillaux, Hartmann, Terrier and Dally state that the presence of these valves generally prevents the passage of a sound or probe in either direction.

Puech describes a membranous valve at the junction of the cystic with the hepatic duct.

The mucous membrane lining the other ducts is smooth, no valves being present except at the duodenal orifice of the ampulla of Vater, where the opening is circular and apparently guarded by a sphincter muscle.

In his description of the common duct Quenu divides it into three nearly equal portions, the first lying above the first portion of the duodenum, the second passing beneath the duodenum, the third lying to the inner side of the descending duodenum. The second and third portions, and occasionally the lower part of the first, lie imbedded in the head of the pancreas. The upper third of the common duct lies between the two folds of the gastrohepatic omentum, often at its right free border. The hepatic artery normally lies to the inner side and the portal vein below the duct. From 100 measurements made by the writer the average length of the common duct was found to be 7.5 cm.

The average adult caliber of the common duct, from 10 measurements by the writer, is about 20 mm. in circumference, that of the common hepatic duct 16 mm. The duodenal orifice of the ampulla of Vater would usually allow the passage of a probe 12 mm. in circumference if introduced from above.

Hartmann describes a lymph node to the inner side of the pelvis or S-shaped curve of the neck of the gall-bladder, imbedded in the tissues, in intimate relation with the wall of the duct. If this is enlarged it frequently gives to the palpating finger a sensation of a calculus impacted in the neck. Quenu describes two other constant lymph nodes, one in the angle of junction of the hepatic and cystic ducts and one on the outer side of the common duct just as it passes beneath the duodenum.

Enlargement of the first of these may cause obstruction of the cystic duct, and of the two latter stenosis of the common duct and obstructive jaundice.

The hepatic artery is normally derived from the coeliac axis; near the head of the pancreas it bifurcates, sending one trunk upward to supply the liver and gall-bladder, the other downward to supply the pancreas, duodenum and greater curvature of the stomach. The hepatic branch normally passes upwards to the inner side of the common and hepatic ducts, enters the transverse fissure by two or more branches, from the right of which a small branch is given off to the gall-bladder, passing behind the ducts. The small veins of the gastrohepatic omentum are exceedingly irregular; one or more may cross the common and hepatic ducts.

*Variations from the Normal*—Quenu states that the gall-bladder is occasionally absent. In these cases there is generally a dilated portion of one or more of the ducts. The commonest seat of such a dilatation is at the ampulla of Vater, beneath the capsule of Glisson or within the substance of the liver. Courvoisier describes a number of such cases; also a number in which he believes the apparent absence of the gall-bladder to be due to extreme inflammatory shrinking, a small fleshy or calcareous nodule being found in the normal position of the viscus. Occasionally a fully developed gall-bladder may be found imbedded in the liver-tissue. The writer observed such a condition in a patient upon whom he had operated without finding the gall-bladder, and at autopsy it was found within the substance of the liver. Pusser records a case of double gall-bladder, each having a separate cystic duct. Similar cases are reported by Codivilla and Huber. Hochstetter and Carl Beck have recorded cases of left sided gall-bladder, without transposition of the viscera.

Occasionally some of the hepatic ducts open directly into the gall-bladder, and in one case cited by Courvoisier the common hepatic opened into the gall-bladder and the cystic and common ducts passed from the fundus to the duodenum. In this case all the bile passed through the bladder to the intestine.

Membranous partitions have been found in the gall-bladder, generally longitudinal in direction. The organ is occasionally shaped like a horseshoe.

Congenital absence of the ducts has been reported, but in the majority of cases such absences are associated with absence of the gall-bladder, or are the result of inflammatory processes.

Courvoisier gives examples of the common duct opening into the duodenum without association with the pancreatic duct, also by a double orifice.

Laennec describes the opening of the common duct into the left side of the stomach near the esophagus. Others have recorded cases of the duct opening into the pylorus, fundus of the stomach and colon. In all probability in the majority of these cases the communications were artificial and due to inflammatory and ulcerative changes. Most of these abnormalities are exceedingly rare and should be regarded as anatomical curiosities.

Of the less important but more frequently observed variations from the normal, the writer would quote from his previous paper as follows: Of 100 subjects examined, in no case was there any considerable variation from the normal position of the gall-bladder, excepting that which could be accounted for by its method of peritoneal attachment, or as a result of inflammatory adhesions. In the great majority of instances the gall-bladder received but a partial peritoneal investment, from one-fourth to one-third of its surface being directly in contact with liver tissue. In five subjects, however, it was attached to the liver only by means of a double fold of peritoneum, forming a distinct mesentery, allowing considerable movement. In three of these was also an extension outward of the free border of the lesser omentum to the fundus, and in one instance to a point one inch beyond the fundus, thus forming a double mesentery, the upper being attached to the under surface of the liver, the lower to the duodenum and transverse colon, and in the instance just referred to, to the hepatic flexure of the colon.

These variations in the peritoneal arrangement allowed a considerable amount of mobility of the viscus, which, if rendered palpable by the presence of calculi or malignant disease, might be felt at any point within the radius of its mesentery.

In only one instance of the five did the abnormal peritoneal arrangement present any feature of surgical importance, and that was the case in which the hepatic flexure of the colon presented a gradual curve and not an acute flexion, and occupied a position extending from the posterior abdominal wall, near the outer border of the right kidney, to the junction of the first and second portions of the duodenum, and from this point downwards, entirely concealing the descending portion of the duodenum, and firmly bound down to it. In this instance the gall-bladder lay between the two folds of the gastrohepatic omentum, the free border of which extended well to the right from the anterior margin of the right lobe of the liver to the hepatic flexure of the colon.

In the above five instances the irregularities were presumably congenital, as no evidence of previous inflammation could be detected.

Nine cases, however, were observed where, as a result of a severe inflammatory process, marked changes in the relations of the neighboring viscera had taken place. In seven of these, in which the conditions were practically identical, the gall-bladder was found to be adherent to the first and second portions of the duodenum, the transverse colon, and omentum; rendering access to the ducts and duodenum for purposes of exploration or operation difficult, and only possible after considerable dissection. In two instances the gall-bladder was firmly bound down by adhesions to the duodenum only; in one of these to the first, and in the other to the first and second portions, the former rendering surgical access to the ducts, the latter to the duodenum, difficult.

In only one instance did the writer find any variation in the ducts. In that subject, in addition to the right and left hepatic ducts, which emerged from the liver at the transverse fissure and joined normally to form the common hepatic duct, two other ducts were found, leaving the under surface of the right lobe of the liver at points about one and two inches to the right of the fissure for the gall-bladder, passing inward, between two layers of peritoneum (an extension outward of the lesser omentum), behind the gall-bladder and cystic duct, and joined the common bile-duct at its origin. These auxiliary hepatic ducts were accompanied by large aberrant branches of the hepatic artery.

The cystic duct, owing to the presence of the numerous folds of mucous membrane, rarely permits the passage of a probe, while in the hepatic and common ducts, which possess no such valvular arrangement, probes pass in either direction with the greatest freedom.

To test the frequency and ascertain, if possible, the conditions under which the cystic duct becomes so altered as to freely admit the passage of a probe, an attempt was made in ninety-seven subjects to pass a soft metal probe from the gall-bladder through the cystic duct into the common duct. In only ten instances was this possible. Of the ten in which the probe passed freely, five, or 50 per cent., presented calculi in the gall-bladder, while of the eighty-seven in which the probe could not be passed, seven, or only 8 per cent., showed calculi.

In the five cases which freely allowed the passage of a probe, but which did not exhibit the presence of calculi in the gall-bladder or ducts, the patency of the duct was in such marked contrast to the great majority of cystic ducts examined, that one was strongly impressed with the possible previous existence of calculous disease in these cases. From these observations the writer feels justified in stating that a degree of patency of the cystic duct, sufficient to allow the easy passage of a probe, is in all probability a pathological condition.

To ascertain with accuracy the position of the hepatic cystic, and common ducts, and their relations to the lower ribs and vertebræ, an adult male subject was injected with 10 per cent. formalin and allowed to remain undisturbed until the tissues were thoroughly hardened and the organs fixed in their normal positions.

An incision was then made exposing the duodenum. This was opened in its second portion, the papilla found and the duct injected from its duodenal orifice with fused metal. The wounds were then carefully sutured. The duodenal extremity of the common duct lies about half an inch to the outer side of the lower margin of the second lumbar vertebra; the cystic duct joins the hepatic opposite the intervertebral disk between the first and second lumbar vertebræ and the right and left hepatic ducts join on a level with the upper margin of the first lumbar vertebra.

The normal relations of the hepatic artery, the portal vein and the bile-ducts have already been mentioned, but in the first 100 dissections by the writer no systematic attempt was made to follow out and ascertain the exact method of distribution of the terminal branches of the hepatic artery, or to note their relations to the ducts.

In general, however, it was observed that there was considerable variation, and that the typical arrangement described in the text-books was not the one commonly present. Ten subjects were, therefore, examined in reference to this point, to ascertain, if possible, the usual method of distribution, and to determine the relations of the chief branches to the ducts.

As in each subject examined, marked differences existed, and as only one corresponded with the text-book type, at the suggestion of Prof. Huntington 40 other subjects were examined, making a series of 50 dissections.

Sketches were made of each at the time of the dissection, which were afterward reproduced in pen and ink.

It will be seen that of the 50 subjects examined, in 3 only did the arterial arrangement correspond with that usually described in the text-books. Eighteen might be said to belong to the so-called normal type, inasmuch as there was a single trunk from the celiac axis, which divided, after giving off the gastroduodenalis, into two or more branches, which passed either in front of or behind the hepatic ducts and eventually entered the liver at the transverse fissure.

In four instances there was a double hepatic artery. In two of these the auxiliary artery came direct from the aorta, in one from the gastric, and in one from the superior mesenteric.

In one instance there were three hepatic arteries, one from the celiac axis, one from the gastric and one from the superior mesenteric.

In nine instances the gall-bladder received branches from sources other than the hepatic artery. In six of these it was from the gastroduodenalis, in two from an auxiliary branch of the superior mesenteric, and in one from an auxiliary hepatic branch from the aorta.

Well-developed branches, capable of giving rise to an annoying hemorrhage, were found arising from the gastroduodenalis and accompanying the common duct for a variable distance in eleven subjects. In two of these subjects, two accompanying branches were present, one on each side of the duct; in two others the branch passed around the duct, while in the remaining seven but a single branch was present, lying to the outer side of the duct. Nine of these vessels were of considerable size, and gave branches to the gall-bladder, the liver, or to both.

In one subject a branch was given off from an auxiliary hepatic artery near the organ of the common duct, and passed downward with the duct behind the duodenum.

In fourteen instances the terminal branches of the hepatic artery passed in front of the hepatic ducts; in twenty-nine they passed behind, while in seven the branches passed both in front and behind.

In ten subjects the hepatic artery bifurcated at a point above the junction of the hepatic and cystic ducts, while in forty it branched below this point, was double or irregular.

In eight instances the type of the arterial arrangement could only be described as irregular. Two of these deserve special mention. In the first the artery divided at the point of departure of the gastroduodenalis into five hepatic branches; two of these passed upward behind the hepatic ducts to the liver; one passed in front of the junction of the hepatic and cystic ducts and accompanied the cystic duct upward to the gall-bladder and right lobe; the two other branches passed outward under the common duct to enter the under surface of the right lobe at points well to the outer side of the gall-bladder, accompanying two auxiliary hepatic ducts from the right lobe. In the other there was no artery supply from the coeliac axis, the hepatic artery arising from the superior mesenteric. In this subject the right branch of the coeliac axis passed downward without branches as the gastroduodenalis.

From these observations upon the arterial supply of the liver, gall-bladder and ducts, it will be seen that the typical distribution of the hepatic artery, as described in the text-books, is rarely seen in the human subject; that the right or free extremity of the gastrohepatic omentum frequently contains a large number of small arterial branches derived often from sources other than the main branch of the hepatic; that branches often accompany and even wind around the common duct; and that important arterial trunks and branches were found to the outer side of the cystic and common ducts in 34 per cent. of the subjects examined.

With a view to finding some landmark by which the duodenal papilla could be easily found, the writer opened the second portion of the duodenum in 77 subjects and attempted to pass a probe upward into the common duct. Under normal conditions, when the ampulla of Vater is not rendered prominent by the presence of a calculus or other pathological condition, the papilla is not easy to recognize by sight, owing to the large number and size of the valvulæ conniventes in this region, as well as the presence of a considerable amount of fluid intestinal contents, and in not a few instances from ten to thiry minutes' search was required before the papilla was located and the probe introduced.

After examination of a number of subjects in which this difficulty was encountered, it was found that the papilla could be much more readily recognized by the sense of touch when the forefinger was introduced into the intestinal wound and the inner and posterior portions of the duodenal wall were explored.

Quite early in these investigations it was noted that, when the incision into the bowel was made just below the junction of the first and second portions of the duodenum, the edges of the wound separated by the finger and thumb of the operator, and the tissues drawn slightly upward, a marked prominence was noted of the inner and posterior portions of the mucous membrane at the point of juncture of the ascending and descending portions of the gut. This prominence was found to be a fold of mucous membrane made by the rather sharp flexure of intestine at this point. It was crescentic in appearance, owing to the cylindrical shape of the gut, and this crescentic shape was markedly accentuated by the upward traction of the edges of the wound.

It was afterward found that, in searching for the papilla, if the forefinger of the left hand was introduced into the descending portion of the duodenum and directed obliquely inward and backward, the papilla was usually felt when the finger was carried downward to a point where the fold described above rested opposite the middle of the second phalanx; in other words, that the position of the papilla was, as a rule, easily located at a point from 2.5 to 3 cm. from the center of this fold.

To demonstrate that this fold was constant and not an artificial production caused by upward traction of the edges of the intestinal incision, ten dissections were subsequently made upon formalin-injected subjects, in every one of which this fold was found to be present.

Mayo Robson, Rutherford Morrison and others have described a peritoneal pouch capable of holding 400 or 500 c.c. of fluid escaping from a ruptured gall-bladder or duct without overflowing into the general peritoneal cavity. The boundaries of this pouch are, above, the right lobe of the liver; below, the ascending layer of the transverse mesocolon; externally, the parietal peritoneum; internally, the peritoneum covering the spinal column, posteriorly, the ascending mesocolon covering the kidney.

The presence of this pouch is well known to anatomists, but that it is a complete basin capable of holding fluid as described, the writer doubted.

To determine this point, twenty subjects were examined. In three of these, there was found a more or less well-marked right colicophrenic ligament similar to the one constantly present on the left side, which served to make this fossa a basin capable of holding a certain amount of fluid when the subject was placed in the dorsal position. In the remaining seventeen subjects no such barrier existed to prevent the escape of fluid downward along the outer side of the ascending colon into the pelvis and lower abdomen.

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## THE DIAGNOSIS OF GALL-STONES.*

BY J. B. MURPHY, M.D.,

OF CHICAGO, ILL.

I SHALL confine my remarks to the diagnosis of various conditions induced in the biliary tracts by choleliths and pathogenic flora, either separate or combined, and attempt to associate particular symptomatic cycles with definite pathological lesions based on my experience in 334 cases of gall-bladder and liver disease. To aid me in making the points clear in the brief time allotted for the discussion, I shall make use of the general scheme outlined on Chart No. 1.

It will be unnecessary for me to dwell on the diagnosis of cholelithiasis manifested by the classic and well-recognized symptoms—colic, nausea and vomiting, local sensitiveness and icterus—all of which appear in the order mentioned and disappear within a few days. These cases have been diagnosticated for centuries. The deviations from the usual course are many, the pathologic processes varied and the ultimate result dependent upon diverse conditions. This can best be appreciated by a careful study of Courvoisier's 1,780 collected cases with their varied clinical courses, pathologic manifestations and post-mortem findings. (Published 1890.)

A few words concerning the symptoms themselves may not be out of place before beginning the analysis of the symptom complex of stones in the various positions in the biliary tracts.

The pain may be classed as: (1) the acute in-

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## CHART I.

- CHOLELITHIASIS DIAGNOSIS.
  - SYMPTOMS
    - Pain
      - Local
      - Referred
    - Colic
      - Character
      - Duration
    - Nausea
      - Emesis
    - Hypersensitiveness
      - (a) Palpation
      - (b) Percussion
      - (c) Inspiration
    - Temperature
      - Continuous
      - Intermittent
      - Remittent
      - Temperature angle of cholangic infection
    - Tumor
      - Shape
      - Position
      - Continuous with liver
      - Relation to hepatic margin
      - Courvoisier's law
    - Jaundice
      - Continuous
      - Remittent
      - Intermittent
      - Relation to
        - Pain law
        - Temperature
        - Tumor
  - CHOLECYSTITIS AND PERICHOLECYSTITIS
    - Acute
      - Calculous
        - Monolithic, 21 per cent.
        - Multilithic, 79 per cent.
        - Obstructive
        - Non-obstructive
          - Catarrhal
          - Purulent
          - Septic
          - Gangrenous
      - Non-calculous
        - Post-typhoid, pneumonic
        - Post-calculous
        - Crypt infectious
    - Chronic
      - Calculous
        - Non-obstructive
          - Catarrhal
          - Suppurative
          - Gangrenous
        - Obstructive
          - Large calc. in neck
          - Infec. above stone
          - Infec. below stone
          - Hydrops
          - Empyema
      - Non-calculous
        - Catarrhal
        - Purulent
        - Contracted
        - Septic or distended
  - CHOLANGITIS
    - Cystic duct
      - Calculous (stone in duct)
        - Acute
          - Catarrhal impacted stone
          - Purulent impacted stone
          - Septic impacted stone
          - Recurrent
        - Chronic
          - Impaction
          - Obstructive
          - Edema of mucosa
      - Non-calculous
        - Catarrhal
        - Purulent
        - Infective
    - Choledochotic
      - Calculous (stone in common duct)
        - In transit-traumatic
        - As ball valve
        - Stationary (Foreign body)
        - In diverticulum
          - Without sepsis
        - Post-colic
          - With sepsis
        - (Traumatic ascending infection after passage of calculus)
      - Infective
        - Catarrhal
        - Purulent
        - Septic
    - Terminal, or parenchymatous
      - With septic cholecystitis
        - 1. Pre-operative
        - 2. Post-operative
      - Post-colic
        - After calculus
        - After echinococcus cysts, or plugs of mucus
      - Idiopathic
        - Catarrhal
        - Purulent
        - Grave

flammatory or infective type, which occurs in virulent infections and is accompanied by involuntary muscular contraction (protection) of the organ or tissue in which it is situated. (2) The aching, cumulative, tension type, which is not guarded by abdominal tension, but is defended by sudden muscular contraction when pressure is made on the distended viscus. The most characteristic reaction in this type of pain is that elicited by pressure applied beneath the right costal arch when the patient makes an effort at deep inspiration. (3) The referred ache or pain which accompanies either of the preceding types; in this there is neither sensitiveness to percussion or pressure at the point to which the pain is referred. In obstructions to the pelvis of the gall-bladder or cystic duct, the pain is referred, on an average of seven cases out of ten to the right subscapular region, in one, to the left subscapular region, and in the other two, varying from the precordia on the left to the subclavicular region on the right of the sternum and up the neck. In all there is a local pain in the gall-bladder region, extending toward the left to the epigastrium. These figures are based upon repeated soundings and irritations at these points after cholecystostomy.

Colic, as used in connection with this subject, has an entirely different significance from the term pain, as used above. It is pain of a distinctly rapid, intermittent or remittent, spasmodic type. It occurs when a foreign body is being transmitted through a canal, the lumen of which is normally smaller than the diameter of the foreign body. It is never due to the over-distention of the gall-bladder and never due to the retention of bile or mucus under pressure. If the foreign body becomes stationary in the duct beyond a few hours, the colic ceases so long as the stone does not advance. It is, therefore, due to a foreign body *in transit* through the ducts. The contraction in the duct wall has been demonstrated to take place one-half to one centimeter from the foreign body, on the hepatic side of the foreign body, when it is in the common duct. The colic is supposed to be due to this muscular contraction. We know the colic in intestinal lesions is due to muscular spasms. The colic is not due to *inflammation* of the gall-bladder, notwithstanding Kehr and Herrick's support of that theory. It is absent under two conditions: (1) when the foreign body is too large to be grasped by the canal, as in the case of stones over one-half inch in diameter; and (2), when they are too small to produce a spasm of the duct in their passage, as the granules frequently found in the sifted stools of cholelithic patients. The large calculi found in the common and cystic ducts are advanced to these positions through cumulative pressure behind, rather than by spasm of the muscular fibers. There has not been demonstrated, to my knowledge, a peristaltic wave in the biliary ducts.

Colic does not occur in obstructions of the ducts from catarrhal or infective edema of its mucosa, nor from obstruction by pressure of neoplasms in the walls or neighborhood of the ducts, nor from cicatricial occlusions nor obstructive flexions of the ducts. Colic is, therefore, absent in every type of biliary obstruction except that of foreign bodies—calculi, echinococcus, ascarides, clumps of mucus, polypi, etc.

The duration of the colic depends upon the length of time the foreign body is moving through the canals. It may cease to advance in the canal, as in the pelvis of the gall-bladder, in the ampulla of Vater or in the dilated condition of ball-valve formation and diverticulum development, and remain there for months or years without producing colic; but as soon as it moves forward in the ducts, there is a recurrence of the spasm. The same is true after cholecystotomy, when the stone moves backward in the cystic duct into the gall-bladder.

The nausea and emesis of biliary obstruction are reflex symptoms, the same as the nausea and vomiting of the obstructed appendix or the obstructed ureter. They may be short in duration or they may continue during the entire period of acute obstruction. By their relaxing effect, they favor the dropping back of the stone into the gall-bladder, in obstructions of its pelvis and often terminate the attack—the so-called "vomiting of gastralgia." The vomiting may last from a few minutes to several hours or days, resembling that of mechanical intestinal obstruction.

There is a second variety of reflex vomiting due to torsion, flexion or valve obstruction of the cystic duct; in this class, the vomiting continues for days, with no severe pain and no colic, and is relieved by liberation of the obstruction and the escape of the gall-bladder contents. When the abdomen is opened for this condition, the gall-bladder is usually enlarged and *not compressible.* It is filled with mucus and grumous bile, but there is no pus. This is a typical reflex phenomenon and of the recurrent type. The vomiting resembles that of pyloric obstruction of acute character and may be so severe as to border on dissolution. I recently operated on a case of this character for Dr. Alex. C. Wiener; the patient made a rapid recovery. The gastric crises of tabes, with or without pain, are often mistaken for gall-stone attacks, but can easily be differentiated. The cure is usually permanent by the fixation of the gall-bladder, favoring a permanent and efficient drainage (Mayo).

Hypersensitiveness of the gall-bladder is present in all varieties of *infection* and *calculous* obstruction, but not in the neoplastic, torsion, flexion, cicatricial or valvular obstructions. The hypersensitiveness is elicited by deep palpation just below the right ninth costal cartilage, or in a line from that point to the middle of Poupart's ligament, as this is the common track of gall-bladder enlargement. Deep percussion along the same line, with patient in forced inspiration gives pronounced pain. The most characteristic and constant sign of gall-bladder hypersensitiveness is the inability of the patient to take a full, deep inspiration, when the physician's fingers are hooked up deep beneath the right costal arch below the hepatic margin. The diaphragm forces the liver down until the sensitive gall-bladder reaches the examining fingers, when the inspiration suddenly ceases as though it had been shut off. I have never found this sign absent in a calculous or infectious case of gall-bladder, or duct disease.

Temperature in biliary infection is very characteristic, almost to a pathognomonic degree; and still more, it has variations peculiar to infections in various positions—in the gall-bladder or the ducts. I shall not go into the details of these variations here, as they will be considered under the different types of infection. I wish only to emphasize the peculiar *angularity* of the temperature and the duration of the complete intermissions, in both of which characteristics it varies from the *curves* with remissions found in other types of infection.

In upward of 80.25 per cent. of cases of cholelithiasis with jaundice, Courvoisier found the gall-bladder contracted. Therefore, in four-fifths of all the cases of cholelithiasis, we should expect an absence of tumor formation. The greater portion of the 20 per cent. in which there was an enlargement of the gall-bladder it was due to impaction of large calculi in the neck of the gall-bladder or in the cystic duct without severe infection, with an occasional impaction in the common duct, under the same circumstances. Where the obstruction was due to other causes, and particularly when associated with jaundice, the same author found an enlargement or tumor of the gall-bladder in upwards of 90 per cent. of the cases. The contraction or diminution in size of the gall-bladder in cholelithiasis is due to infection, infiltration and subsequent contraction. This led to Courvoisier's law, which is—"In 80 per cent. of the cases of obstruction of the common duct due to stones, there is contraction of the gall-bladder, while in 90 per cent. of the cases of enlargement of the gall-bladder, the obstruction is due to causes other than stone," such as cancer and cysts of the pancreas, pressure from other neoplasms, cicatrices, lymphatic glands (Bremer), pressure on the ducts, torsion, flexion, etc. The characteristics of cholecystic enlargements are: (1) That they are continuous with the upper surface of the liver; (2) that they project sharply from the margin of the liver; (3) that the margin of the liver can occasionally be traced to a gradually diminishing edge attached to the upper surface of a globular mass. (This last is characteristic of gall-bladder enlargement.) The enlargement is often associated with the linguiform elongation of the right lobe.

Therefore, a large gall-bladder with jaundice is indicative of malignant disease or cicatricial contraction and contracted gall-bladder indicates a cholelith, in the percentage already mentioned. The contraction of the gall-bladder in gall-stones is due to the infection of the gall-bladder with infiltration of its walls and subsequent contraction, the same as we frequently see in the urinary bladder under like pathologic conditions. Although Ehret and Stolz discredit Courvoisier's law and do not seem to accept this explanation, they both correspond with our experience. It is equally clear why the gall-bladder should enlarge with non-infective obstructions of the common duct or cancer of the pancreas, exactly as the urinary bladder enlarges from aseptic compression in prostatic hypertrophy, by producing distention and backing up of the fluid.

In the cases operated on by me, jaundice, as a symptom, has been absent in 86 per cent. of the cases, both in the history and in the patient at the time of admission to the hospital. That is, in only 14 per cent. of the patients operated was jaundice manifest as a symptom at any time in the course of the disease. Adelbert Merk found jaundice in 58 per cent. of his first 104 cases. The degree of the jaundice depends upon the completeness of the obstruction and not on the size of the calculus. The degree of obstruction is greatly influenced by the infection of the duct at the seat of the calculus; that is, the obstruction is made up of the mechanical and infectious elements. The inflammatory element can be appreciated by recalling the intense jaundice which may be present in catarrhal inflammatory processes of the common duct. The jaundice is continuous throughout the entire course of the disease without even a remission, in malignant obstructions. It is remittent in calcular obstructions, with changes in the degree of the infection, with dilatation of the duct to the condition of ball-valve formation, and when the stone remains for a long time in one situation. While it may be *remittent,* it is never *intermittent* while the stone remains in the hepatic or common ducts. It *is* intermittent when the stone is partly in the common and partly in the cystic duct; it is intermittent when the stone is situated in the cystic duct or gall-bladder and causes recurring inflammatory swellings which extend to the common duct; and it is intermittent between the passage of stones through the common duct.

In the relation of jaundice to pain, this law may be formulated: (1) That jaundice due to gall-stones is always preceded by colic; (2) that jaundice due to malignant disease, or catarrh of the ducts accompanied by infection, is never preceded by colic.

To simplify the subject of diagnosis, we shall make an excursion with a calculus from its place of formation in the gall-bladder, through its neck, through the cystic and common ducts, and on through the enteric tract. The difficulties which we shall encounter in transit will be dependent upon: (*a*) the size of the calculus; (*b*) its impaction in the neck of the gall-bladder or the ducts; (*c*) its course and speed of transit; (*d*) its arrest within the ducts or diverticula; (*e*) its escape through the wall of the biliary tract, (1) into the peritoneal cavity, (2) into neighboring viscera, or (3) through the abdominal wall; (*f*) added to these are the deleterious effects of a more or less virulent infection induced by a variety of infective flora. From the culture experiments, it is impressed upon us that the bile in cholelithiasis should be considered, from a surgical standpoint, always infected and treated accordingly. This statement does not include all cases of cholelithiasis, but only those applying to the surgeon for relief. The tracts of infection are: (*a*) the portal vein to the liver; (*b*) the common duct, from the intestine; (*c*) the splenic vein; (*d*) the general circulation (this is rare—Remy); and while infective microorganisms are often present in the bile tracts, it requires other conditions to make the bile and the canals good receptive media; the presence of infective flora is not incompatible with the normal function of the canals.

Calculi may be present for an indefinite period without producing any recognizable symptoms. The records of necropsies show that gall-stones are present in from 6.94 per cent. (Johns Hopkins Hospital Reports) to 12.2 per cent. (von Recklinghausen) of all post mortems. A very large proportion of these cases presented no symptoms during life, and doubtless in a smaller number, the symptoms were present but unrecognized. It is therefore evident that there are special conditions necessary for the development of a symptomatology in connection with gall-stones in the gall-bladder. These are principally: (*a*) disarrangement of the calculi; (*b*) impaction in the neck of the gall-bladder and (*c*) infection of the gall-bladder, with or without impaction. When gall-stones become disarranged, they are frequently carried with the bile and mucus into the neck of the gall-bladder and if small, on through the ducts into the intestine, producing pain, nausea, hypersensitiveness and jaundice; then the attack subsides, to recur at varying intervals. When a large calculus produces disturbance by impaction in the cervix of the gall-bladder, the symptoms are pain, nausea and vomiting, pronounced hypersensitiveness, particularly when, in the examination, the fingers are hooked up under the liver and the patient attempts to take a deep inspiration; then the pain becomes intolerable. This is the most constant and characteristic symptom; percussion below the ninth costal cartilage on the right side may give pain; there is no jaundice and no elevation of temperature; the attack usually subsides with the emesis, the pain being relieved by the stone falling back into the now globular, overdistended gall-bladder, the relaxation occasioned by the vomiting favoring this change of position. So closely is the relief associated with the emesis that patients frequently say, "If I could only vomit, I should be relieved of my gastralgia;" and "gastralgia" is the diagnosis made by the physician in more than 90 per cent. of the cases. This is the most common type of cholelithic manifestation, and a single patient may suffer from two or three to as many as a hundred attacks, before the stone becomes permanently impacted in the cystic duct, or a new train of symptoms develops from an intercurrent infection. I have watched one patient go through these attacks almost monthly for three years, and another for seven years before they would consent to operation.

When infection of the gall-bladder takes place, with calculus, the disturbance produced is in direct proportion to its virulence and tension; if mild, it produces a hypersensitiveness and no pyrexia unless the products of infection are retained in the gall-bladder under pressure by the impaction of a stone in its cervix; then the temperature rarely exceeds 101° F. This is a common course in the aged; the pain is pressing, continuous in character, not colicky; a small tumor may be palpable in the right hypochondrium; there is no jaundice and the attack is passed through in six to ten days. When the infection is virulent, the pain is more severe; within a few hours of its onset there is a chill; the temperature usually rises to 102½°, or 103½° F.; the right hypochondrium becomes exceedingly tender; the rigidity of the muscles prevents the palpation of a tumor; nausea and vomiting are frequently present and persistent, and the patient's condition is one of profound depression with infection.

The mucosa of the gall-bladder may become necrotic and even rupture to form a circumscribed or general peritonitis. I recall a case of this kind which occurred the second day after confinement. The rupture took place into the peritoneum and the patient died on the sixth day of a general suppurative peritonitis. The cardiac manifestations and anxiety of the patient were such that the suspicion of angina pectoris was entertained until a few hours before death. The symptomatic manifestations of infectious cholecystitis without impaction of the stone in the neck of the gall-bladder or cystic duct are neither so severe nor dangerous, as when the impaction occurs after a virulent infection. Here the pain is more intense, the chill is usually severe and prolonged and the temperature rapidly reaches 104° to 105° F. The vomiting is persistent and the depression great. Pressure in the right hypochondrium cannot be tolerated and the patient is intensely ill. So destructive is infection under these circumstances, that the mucosa of the gall-bladder rapidly becomes gangrenous from the biotic and toxic effect of the micro-organisms and the pressure under which the products of infection are retained. Three of my most pronounced cases of this type were of monolithic origin, the first operated by me for Dr. Conley under the diagnosis of acute appendicitis:

*Case I.*—Mrs. C., aged sixty-two years, weight 260 pounds; liver was enlarged and the gall-bladder situated in the right iliac fossa, was adherent to the caput coli and small intestine. Its mucosa was gangrenous and the gall-bladder was full of pus, notwithstanding that the operation was done 42 hours after the initial symptoms. A single pure cholesterin calculus was impacted in the cervix of the gall-bladder; it was easily removed, immediately followed by the discharge of bile and the patient made an uninterrupted recovery.

*Case II.*—Operated for Dr. Brumback. Mrs. M., age fifty-four years; diagnosis, infective cholecystitis; obstruction of cystic duct; operation 62 hours after onset. The entire gall-bladder was gangrenous and came away as a slough the sixth day after the operation, and with it a single, clear cholesterin stone. Recovery.

*Case III.*—Miss F., age twenty-six years; Mercy Hospital; operated 41 hours after onset. Gall-bladder gangrenous; portions of it sloughed, and came away a few days after the operation. Single mixed calculus. Recovery.

In these three cases, there had been no previously recognized symptoms of gall-stones.

*Case IV.*—Rev. F., aged fifty-eight years; Mercy Hospital. History of gastralgia for a period of twelve years. The attacks were never accompanied by fever, nor followed by jaundice. The present attack was initiated by pain, severe chill, high temperature and the classic symptoms of virulent gall-bladder infection. Operation 64 hours after onset of symptoms. Mucosa gangrenous in many areas. A large number of calculi were found, one impacted in the cystic duct, and there was a considerable quantity of offensive pus. Recovery.

An accurate diagnosis was easily made in the last three cases after the error which occurred in the first. These cases illustrate how rapidly destructive, virulent infections of the gall-bladder become under the pressure of accumulating products, with impaction in the neck of the cystic duct.

There is another distinct type of infection of the gall-bladder. It is manifest by recurring chills, high temperature, with a complete subsidence of the temperature within a few hours. There is absence of pain, no colic, no jaundice, but occasionally a mild discoloration of the sclera; in short, there are no symptoms specially referable to the biliary tracts. These are acute cases, and in all of mine they have been associated with enlargement and edema of the gall-bladder wall. Some had previously complained of an aching sensation in the right hypochondrium, with no pain and no other noticeable symptoms. These cases are most difficult of diagnosis and still the few symptoms are sufficiently regular and characteristic to admit of a diagnosis before operating. The attacks come on with severe chill, without pain; the temperature in an hour will rise to 104° to 105° F., remain stationary for a few hours, and then drop as suddenly to normal and remain normal for hours, days or even weeks, when it will as suddenly go through the same rapid variation and continue to repeat itself at irregular intervals; all of the time without any special reference in a symptomatic way to the gall-bladder. So pronounced is the chill and so complete the fever intermission that the most common diagnosis is malaria. These temperature changes are so characteristic that I have given them the name of "The Temperature Angle of Cholangic Infection." The one physical manifestation which was uniformly present was the inability of the patient to take a deep inspiration without pain, when the physician's fingers were deeply pressed beneath the right ninth costal cartilage. These attacks occur with or without stone; more frequently without. I shall cite an illustrative case: Dr. B., aged thirty-nine years, was ill for a few days and while en route from Chicago to New York for his summer vacation, was attacked with a severe chill; temperature rapidly reached 104½° F.; subsided within a few hours to normal, leaving him a little the worse for his experience; the third day following, he had a similar attack; on the fifth another; and on the seventh, a fourth; he had no pain and no sensitiveness or soreness in any part of the body. The malaise and depression, following the high temperature became marked, so he returned to his home in Chicago. Blood examination revealed absence of plasmodia; a hyperleucocytosis of 9,200; absence of Widal reaction. Chills and fever now became more frequent, occurring sometimes twice in one day and then skipping a day or two. The temperature, following each chill, was never less than 104° F. and reached as high as 106° F. He became emaciated, sallow, extremely feeble and death seemed imminent. There was no jaundice and no symptoms referable to the biliary tract. A careful examination elicited sensitiveness in the right hypochondrium beneath the costal arch on deep respiration. Diagnosis: infection of the neck of the gall-bladder and cystic duct, without calculus. Operation, cholecystotomy, seven weeks after onset of symptoms. The mucosa of the gall-bladder resembled a granulated eyelid; no pus discernible macroscopically; culture and microscopic examination showed the presence of the *Staphylococcus albus*. The second morning following the operation, there was a recurrence of the chill with temperature of 105° F.; from that day the temperature gradually become less, and in ten days reached normal and patient made rapid and complete recovery. The drainage tube was not removed for a number of months, because in a previous case of this character, the patient died on the third day after the removal of the drain and closure of the gall-bladder by suture, notwithstanding it had been draining for three months and all of the evidence of infection had ceased; cause of death, acute, septic cholangitis, though the sutures were removed on the second day. I could cite a number of septic cases similar to the above, all without pain, distress or perceptible tumor, but one is sufficient to illustrate the class; in these cases the gall-bladder was not contracted.

Another type of gall-bladder infection may possibly be confounded with this, that is, acute phlegmon of the gall-bladder, developing on malignant disease of its mucosa. The onset is severe, with chill and high temperature, with or without colic. There is a remission of the temperature morning and evening from this time as in ordinary septic processes, but never complete intermission, therein differing from the temperature angle of gall-bladder infection. After a septic process is inoculated upon a malignant lesion of the gall-bladder, the downward course of the patient is rapid and uninterrupted, the sepsis playing an important rôle. These patients usually succumb in from three to six weeks. In syphilis of the liver, the temperature is of a remittent type, and often continues for weeks at a time. It is only occasionally associated with jaundice. It rapidly disappears on mixed treatment. In my early experience, I made a section on one of those cases, believing it was calculous disease with infection. The patient rapidly recovered under mixed treatment.

We have another class of cases, the contracted type of gall-bladder with infection, with or without preceding colic, but usually the sequence of primary calculous disease. In this class, the patient has recurrent attacks of chills and high temperature with subsidence, remaining normal from a period varying from a few hours, to as many months, when the same symptomcycle is again passed through. Here we have also the classic temperature angle of cholangic infections. The gall-bladder is contracted to a teat-like process, indurated, deformed and surrounded by adhesions. A case: Mr. C., aged seventy-eight years; seen in consultation with Dr. Norman Bridge, of Pasadena, in March, 1900. The patient gave a history of recurring attacks of chills and fever running over a number of years. The attack would come on every few months, last a few weeks and disappear, to recur, sometimes with regularity, again without. The attacks were never associated with pain or marked sensitiveness and the patient was never jaundiced. When seen in consultation, he had had two chills within twenty-four hours; following each the temperature exceeded 104° F., and the patient was in a very much impaired condition and had been confined to bed. It was agreed that the cause of the manifestations was a cholecystic infection, although the only physical sign present was tenderness beneath the right costal arch on deep inspiration, but there was the classic temperature angle of cholangic infection. The operation revealed a gall-bladder not larger than the little finger to the second joint, buried in a mass of adhesions; when opened, its wall was one-quarter of an inch thick, and its lumen contained only a few drops of mucopurulent material. It was incised for its entire length into an occluded cystic duct; a rubber tube was sutured into the incision, as the lumen was so small it would not admit it. Following the operation, the patient had a few chills and high temperature. His temperature the fourth morning was slightly elevated and from that time his convalescence was slow but complete and there has been no return of the symptoms, up to August of last year, when I received my last report of the case from Dr. H. H. Sherk, who assisted me in the operation, and cared for him afterward. A similar condition, with a history extending over a period of four years and associated with occasional attacks of colic, a mild icterus and an hour-glass contraction of the gall-bladder was found in the case of General A., operated by me a year ago this month, for Dr. Jennings, at Detroit. It was evident, from the history, that there had been a stone at some time previous to the operation, although none was found at the operation. The attack of gall-bladder trouble could be distinctly traced to a typhoid which occurred four years previous. His recovery has been complete. Drs. Jennings and Longyear reported colon bacilli from the cultures of the gall-bladder four months after the operation.

Cystic duct obstructions present a different train of symptoms from those of the gall-bladder, dependent principally upon the size of the calculus. If that be sufficiently small to become engaged in the cystic duct for a short time, the patient suffers colic, nausea and vomiting, local tenderness without temperature and the attack terminates in jaundice, with sudden cessation of the colic, or with a gradual cessation of the colic and a retention of the stone impacted in the cystic duct. If the stone be large, it may remain in this duct for years and will be followed, as a rule, by enlargement of the gall-bladder and hydrops or empyema, depending upon the type and degree of the infection. If the stone gradually advances in the cystic duct, even when it is a large one, it may do so without colic, but with a constant sense of pressure, pain and hypersensitiveness. A stone five-eighths of an inch in diameter to twice that size will gradually advance in the cystic duct until it reaches the common duct and the patient will never complain of colic or suffer from chills and fever. Infection in this class of cases has been shown by examination to exist below the calculus, but rarely does it extend to the gall-bladder, and once the stone is impacted, it is practically impossible for infection to pass by it into the gall-bladder. If virulent infection surrounds the stone, there will be necrosis and perforation of the duct and usually perforation of the neighboring viscus which becomes adherent to the duct, and the calculus escapes into the alimentary tract. An unusually large stone may be retained in a diverticulum or pouch of the cystic duct; in that position it frequently becomes infected and manifests itself by chills and angular temperature. There are no sweats and no colic or jaundice. These symptoms may be repeated for days and then subside for weeks, the same as in gall-bladder infection. The manifestations of septic absorption are far more marked than in the gall-bladder. These cycles are not accompanied by pain or colic and never by icterus, but always by hypersensitiveness in the right hypochondrium. When a stone becomes retained in a diverticulum, the virulence of the infection may subside and the patient recover without operation, by the escape of the calculus or even with the calculus retained in position, but then the infection usually recurs. If the quantity of pus discharged from the cystic duct into the common duct from an infected retained calculus be as great as that discharged into the gall-bladder after a cholecystotomy, it is surprising that we do not have more frequent symptoms of common duct infections. This is rare, though mentioned by Ehret and Stolz. It is possible edema occludes the duct on the proximal side, but it does not do so often. Swelling of the mucosa often occludes the cystic duct for days after cholecystotomy, wherein all the stones are removed and during that period of occlusion no bile escapes through the external opening, and no biliary drainage is in progress.

*Stones in the Common Duct.*—If a stone passes rapidly through the common duct and is retained for only a few hours or a few days, the patient suffers from the classic attack of colic and pain in the right hypochondrium and referred to the epigastrium, the right subscapular region and occasionally to the left subscapular region; nausea and vomiting, jaundice and epigastric tenderness, without fever. The colic continues as long as the stone continues to advance in the duct. If the stone becomes stationary or forms a dilatation of the duct, there is a cessation of this symptom. The amount of icterus will depend upon the degree and duration of occlusion of the duct. When the stone is arrested in the canal the icterus continues, though it may be remittent. It is never truly intermittent as long as the stone remains in the duct. It is difficult to appreciate how a stone can so occlude the duct as to produce acholic stools for a long period of time, when we think how difficult it is to plug an external biliary fistula so that it will not leak. It should be equally difficult to completely occlude the common duct. The occlusion must be due to the infection and swelling of the mucosa about the stone. Occasionally the stone is arrested in the duct, and remains stationary for a longer time. There is then a dilatation of the duct on the hepatic side of the obstruction, which may become so great that the stone is permitted to slide back and forth in the dilated portion of the duct, giving rise to the valve-like action of Fenger. When the stone is in this position, there may be a diminution of the icterus, but it is never completely interrupted. The presence of biliary coloring matter in the blood with icterus absent, for months after the calculus is removed, cannot be interpreted to mean that the duct is still obstructed or the smaller channels are infected. The patient ceases having the attacks of colic when the stone is not advancing, though pain may be recurrent. In this upper portion of the duct, as well as in the ampulla of Vater, the canal very frequently becomes infected. Even in the physiological condition, it is quite common to find infective flora from the duodenum in the apparently normal duct, as high as the bifurcation. When the foreign body causes an abrasion, there is then formed an atrium for infection and absorption, and the patient begins to have the manifestations of infective jaundice, formerly called "pernicious malarial jaundice" or "malignant jaundice of ague." When this infection occurs, we have repeated chills, high fever and rapid subsidence, with complete intermission of the fever and chills, a continuation of the jaundice, with a recurrence of the cycle of symptoms. The temperature angle is the same as mentioned in the infections of the canal higher up, and is equally characteristic. Here it is associated with jaundice, showing the location of the stone. It is not surprising that we have an infection when the stone is arrested in the duct, nor is it to be wondered at that we have pronounced manifestations, both in the quantity of pus produced and the symptoms of sepsis. The neck of the gall-bladder, the cystic duct and the common duct have a rich supply of lymphatics, and so respond to infection with the same pronounced manifestations as the cervices of the other hollow viscera, such as the urinary bladder and the uterus when acutely infected. Once sepsis is manifested with a stone in the common duct, there appears to be no cessation of recurrence of symptoms of the septic process, until the foreign body is removed. This is exactly what occurs when a foreign body becomes impacted in the nose; we note the fever, the edema, the purulent discharge and eczema, produced by a peanut or grain of corn in a child's nose. When a stone has once formed a diverticulum or dilatation of a duct, it is seen that it is next to impossible for further progress in the canal to take place, and the smaller the duct the greater the liability of the retention. It can, however, escape through ulceration of the wall of the duct, into the peritoneal cavity or into a neighboring adherent viscus, as the stomach or, more frequently the duodenum. When the sepsis is pronounced, with the stone in the common duct it terminates in a comparatively short time; either the stone perforates the canal, and permits the free passage of the bile, or the patient dies of septic cholemia.

When the stone is arrested in the ampulla of Vater, the drainage is frequently more free and the manifestations of sepsis less marked, than when it is one-half inch or more from that point in the common duct. When in the ampulla of Vater, we have the additional danger of infective pancreatitis or fat necrosis. When in the course of a calculous jaundice we have a sudden and extreme collapse, intense pain without any gradual preceding increase of pain, it is right to assume that the condition is due to a beginning fat necrosis, and not to a perforative peritonitis, nor to a progressive infective cholangitis. In the fat necrosis there is no hyperleucocytosis; with perforative peritonitis, and the acute infective cholangitis there is a pronounced hyperleucocytosis. If an operation be performed the plaques of fat necrosis in the mesentery and omentum and the nodules in the pancreas will indicate the pathological condition, though the stone will be found in the common duct and a septic peritonitis not manifest. In these cases the surgeon should not stop with the recognition of the fat necrosis, but continue to the removal of the calculus. For some unexplained reason, the operation appears to have a beneficial effect upon the fat necrosis, even without incision of the pancreas.

The escape of the stone from the gall-bladder into the stomach, is not an uncommon complication. In one of my cases, the patient vomited gall-stones for a number of months after I had opened and drained the gall-bladder, and removed all the stones in sight. In another I found the stone protruding into the stomach and also into the gall-bladder, from an intermediate gastrocystic pocket or sinus. When large gall-stones are found in the common duct, there may be complete absence of a preceding symptom of colic, under the same conditions as we find stones in the cystic duct, and foreign bodies in the intestine without colic, namely, in a dilated portion, stationary and not completely occluding the lumen. These, however, are the rare exceptions, and it may be laid down as a law (*a*) that icterus unaccompanied or preceded by colic is not of calculous origin; and (*b*), that a gall-stone jaundice is always preceded by colic; if the jaundice be of long duration, the patient may forget the primary attack of colic.

As a striking exception to this rule, I shall cite a case: Dr. H., Vancouver; aged fifty-eight years; Mercy Hospital. Patient had suffered from jaundice for nine months previous to admission; being a physician, he gave an exact account of the onset. It came on gradually, and never subsided nor diminished materially in its intensity. There was no pain on the days preceding the attack, and no history of pain or colic in the right hypochondrium. He had lost 23 pounds in weight. The icterus was intense; no tumor detected; some sensitiveness on deep inspiration in the right hypochondrium. From his history, a diagnosis of probable carcinoma of the head of the pancreas was made; there was no sugar in the urine. The doctor desired an exploratory operation, the usual trans-rectus incision was made. The gall-bladder was enlarged, not materially thickened and practically normal in color. There were no adhesions and in the common duct was found a calculus five-eighths of an inch in diameter and one and one-eighth in length. It was removed and the duct sutured; the pancreas was not involved. Patient's recovery complete. This case illustrates the type of large stone in the common duct with jaundice not preceded by pain or colic. In the cystic duct large calculi are the more common, and here they are forced into the duct by the contraction of the gall-bladder, or better, by the accumulating mucus in the gall-bladder. So gradual is the advancement of these large calculi that colic should not be expected, for physical reasons. The large calculi of the common duct show by their formation that they receive accretions while they are in the duct, recorded by their various biliary-colored layers. From the history and symptoms, with the exception of duration of existence, there is practically no means of making a differential diagnosis between this and malignant disease.

There are two very strikingly contrasting conditions under which passing gall-stones do not produce colic; one when they are very small, too small to produce obstruction or spasm of the ducts, and the other when they are very large, so large that the wall is paralyzed by the overdistention and infiltration by the extremely slow advance of the stone.

When gall-stones produce obstructions in the intestinal tract, they usually find entrance into that canal by perforations of the wall of the gall-bladder or ducts. This is rarely preceded by icterus, as stones of great size seldom find admission into the intestine through the common duct. There are no special symptoms by which the obstruction of biliary enteroliths can be differentiated from the obstruction of coproliths. It is unnecessary to give these cases in detail.

## THE MORTALITY IN APPENDICITIS; ITS CAUSE AND LIMITATION.

BY A. J. OCHSNER, B.S., F.R.M.S., M.D.,
OF CHICAGO, ILL.
SURGEON-IN-CHIEF OF THE AUGUSTANA HOSPITAL AND ST. MARY'S HOSPITAL OF CHICAGO; PROFESSOR OF CLINICAL SURGERY IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF ILLINOIS.

In selecting this subject I have complied with a request of the officers of your association, well knowing that it is old and almost worn out, because almost every surgical writer of the past decade has discussed appendicitis.

It has been the hope of most surgeons of the present generation to be able to aid in some way in reducing the mortality in acute appendicitis and, although the subject has been approached from many different sides and the views of the various authors have diverged greatly and have been even diametrically opposite in many details, still I believe that the time is not far distant when these combined efforts will result in a great reduction of the mortality in this disease.

From the character of the disease itself it is plain that there must always be a mortality. It will never be possible to formulate methods of treatment which will be successful in every case.

Experience has taught some most important facts in connection with this disease, which it seems to me, should act as the foundation upon which to build the methods which are to reduce its mortality. We know from experience that there are two classes of patients suffering from appendicitis in whom the mortality is almost ideally low. The first class contains the patients who come under the care of the surgeon at the very beginning of the attack, before the infectious material has extended beyond the tissues of the appendix. This condition is usually present in severe cases during the first thirty-six hours after the beginning of the attack and in milder cases for a longer period. The second class comprises the patients who come under the care of the surgeon during the interval between acute attacks. If it were possible then to reduce all cases of appendicitis to these two classes, the mortality for all cases would of itself become exceedingly low.

In order to illustrate the manner in which a form of treatment can be built up on these two important facts in practice I have reviewed the histories of all the patients whom I have operated during the present year at the Augustana Hospital from January 1 to December 1, 1902. I have chosen this period arbitrarily, because in this manner we can obtain a fair average without covering too great an amount of material and the cases all being operated and treated in the same hospital by the same surgeon with the same assistants necessarily insures a fair degree of uniformity. I will state, however, that my results have been the same in the cases I have operated during the same period of time in St. Mary's Hospital.

The entire number of patients I have operated during this period in the Augustana Hospital is 337. Of these 192 were acute and 145 chronic. Of the former class 81 suffered from perforative or gangrenous appendicitis with more or less extensive peritonitis, 13 of these suffered from diffuse peritonitis at the time of admission; 111 cases suffered from acute appendicitis without perforation, the pus being confined to the lumen or the tissues of the appendix.

The general plan of treatment adopted was as follows: In every case of acute appendicitis entering the hospital all food by mouth and all cathartics were prohibited. In case the patient suffered from nausea or vomiting, gastric lavage was at once employed. In the milder cases the patient was permitted to rinse the mouth with cold water and to drink small sips of very hot water at short intervals. In the severer cases the patient was permitted to rinse the mouth with cold water, but was not permitted to drink either hot or cold water for the first few days until the acute attack had subsided when the use of small sips of hot water was begun. If the nausea persisted gastric lavage was repeated once or twice at intervals of two to four hours, in order to remove any substance which had regurgitated into the stomach from the small intestines.

The patient was supported by nutrient enemata consisting of an ounce of one of the concentrated predigested liquid foods in the market, dissolved in three ounces of warm normal salt solution introduced through a catheter which was inserted a distance of two and one-half to three inches. In case this gave rise to pain or irritation or nausea it was interrupted for twelve to twenty-four hours at a time. In cases in which no water was given by mouth an enema of eight ounces of normal salt solution was given four to six times a day in addition to the nutrient enemata. In cases operated during the acute attack this treatment was continued for several days after the operation.

After the patient had been free from pain and otherwise practically normal for four days he was first given from one to four ounces of weak beef tea, preferably prepared from commercial beef extract every two hours. In a few days one of the commercial predigested foods, dissolved in water was substituted, still later, equal parts of milk and lime water, then general liquids, then light diet and finally after the patient had fully recovered, full diet was given. The commercial extract of beef was chosen, because it contains only soluble material which will usually be absorbed from the stomach without giving rise to peristalsis. The rectal feeding was continued in the mean time. By following this plan the patient is satisfied and one is less likely to do harm with this than with any other form of food. Of course the benefit to the patient is chiefly imaginary.

So far nothing has been said of the operative treatment, intentionally, because the treatment I have just described was applied to all cases of acute appendicitis without regard to the severity of the case or the stage at which the patient was admitted to the hospital. Moreover, because this is the part of the treatment which is responsible for the enormous reduction in the mortality.

*Operative Treatment.*—The rule which was followed as regards the time of operation varied with the individual cases. In any given case, the operation was performed at the time the patient entered the hospital or if this occurred at night, on the following morning, provided it seemed clear from the condition of the patient that he would recover if the operation were performed at once, judging from my own experience in similar cases treated in the past. This could usually be expected in severe cases admitted before the end of thirty-six hours from the beginning of the attack and in the milder cases during a longer period.

In all cases in which the recovery seemed at all doubtful the operation was postponed and the patient was placed under the treatment described above until the acute condition had subsided. In some of these cases it became necessary to open a circumscribed abscess and later to make a second operation for the removal of the appendix. In other cases the inflammation became circumscribed and the appendix could be safely removed, the pus sponged out of the circumscribed abscess, the abdominal wound could be closed, a drain being introduced through a small incision two inches externally to the abdominal incision.

Of the 81 patients suffering from perforative or gangrenous appendicitis 37 were operated at once and 44 were treated for a period varying from four days to five weeks by the method described above before the operation was performed.

Of the 111 cases of acute appendicitis without perforation 107 were operated upon admission and four were subjected to the treatment described above for a number of days previous to the operation. It should be stated here that in each of these four cases I had diagnosed perforative appendicitis, because of the severe peritoneal irritation and also that among the 37 cases of perforative appendicitis which were operated at once there were several in which I had expected to find the infectious material still confined to the appendix at the time of the operation.

The 145 cases suffering from chronic recurrent appendicitis admitted during the interval between attacks were all operated within a day after their admission.

In the cases which were first subjected to the starvation treatment the time of operation was chosen whenever the patient's condition seemed to indicate that the operation would be safe or whenever a circumscribed abscess had formed which could be opened externally without exposing the patient to the risk of infecting the general peritoneal cavity. The form of preliminary treatment described above was employed in all of those cases in which my former experience had taught me that the immediate operation would be followed by a high mortality, a class of cases which come to the surgeon on the third, fourth, fifth, sixth and seventh days after the beginning of the attack with severe distention of the abdomen, tense abdominal muscles, a bad facial expression, marked nervousness, pulse above 100, persistent nausea or vomiting *and always a history of having received cathartics and some form of liquid nourishment by mouth.*

The reason for operating all cases of acute appendicitis in which we could be reasonably certain that the infectious material was still confined to the appendix at once upon admission to the hospital have often been stated, but they are important enough to bear repetition: (1) There is almost no mortality in these cases if operated by a competent surgeon; (2) the patient will be permanently cured; (3) he will be disabled for work for only a short period of time; (4) his suffering is reduced to a minimum; (5) drainage will not be necessary, consequently there will be no postoperative ventral hernia; (6) all the other complications of acute appendicitis will be avoided, among these are most prominent, (*a*) peritonitis, (*b*) metastatic infection, (*c*) adhesions, (*d*) fecal fistula, (*e*) thrombophlebitis, (*f*) secondary infection of the pelvic organs in the female and consequent sterility.

On the other hand none of these complications can be avoided with certainty in case the operation is performed during the acute attack after the infection has extended beyond the tissues of the appendix; indeed an operation at this time favors all of these complications. On the other hand, these complications can again be avoided if the operation is performed in the interval.

The following statement will give the mortality:

Entire number of cases operated, 337; Number of deaths, 7; Mortality 2 per cent.+
Entire number of acute appendicitis, 192; Number of deaths, 6; Mortality, 3 per cent.+
Entire number of chronic appendicitis, 145; Number of deaths, 1; Mortality, 1 per cent.—

At this point I wish to state that every patient who applied for admission was received without regard to the severity of the case and that this list includes all of the patients who entered the hospital suffering from diffuse peritonitis resulting from appendicitis. Were these cases eliminated, the mortality would be almost ideally low, because three of the six patients who died in the group of cases suffering from acute appendicitis were virtually in a hopeless condition when they entered the hospital. Two of these were not operated, but their deaths are counted in order to make the statistics include all the deaths which occurred in patients treated for appendicitis during this period.

The case of chronic appendicitis would not have died had only the appendix been removed, the death occurring as the result of a hemorrhage from the ovarian artery, the Fallopian tubes having been removed and the ligature having cut through the artery.

I will add a short abstract of the histories of the fatal cases in order that a fair idea may be obtained of the character of these cases:

*Case I.*—A boy, four years old, who had formerly been in good health, became suddenly very ill after taking an unusually large meal followed by candy, nuts and fruit. He had complained of stomach-ache before taking this meal, but notwithstanding this he ate a large amount. The patient complained of pain in the region of the stomach and his mother attributed his condition to indigestion and gave him a large dose of castor oil. He came to the hospital forty hours after the beginning of the attack and it seemed to me likely that the entire infection would still be found in the appendix. I consequently operated at once, but found a perforated appendix and a diffuse peritonitis of which he died eleven days after the operation.

Had I not erred in my diagnosis and consequently not added the traumatism of the operation to the existing peritonitis, this patient would probably have recovered. The fact that the child lived eleven days after the operation would indicate that the peritoneum would have been capable of disposing of the infection, had not the traumatism been added.

*Case II.*—This patient, an emaciated man forty-four years of age, entered the hospital at the end of an acute attack, which had not been very severe. He had suffered from recurrent attacks of appendicitis at various intervals for a period of about twenty years. The last three attacks had been more severe and he was unable to recuperate from them. I operated at once and found a severely congested appendix, club shaped at the distal end and constricted at the cecal end. It was universally adherent to the lower end of the cecum and the distal end which contained a small amount of pus was adherent to the anterior surface of the iliacus muscle.

The appendix was dissected out and the wound was closed. The patient died on the seventh day from peritonitis. The autopsy showed a small amount of cloudy fluid in the pelvis. The infection had started from the tissues to which the club shaped end of the appendix had been adherent, the infection having evidently extended through the walls of the appendix during the late acute attack. This death could have been avoided by proper drainage. It is to be charged to faulty technic.

*Case III.*—This patient an anemic, emaciated, sickly boy, eight years old, entered the hospital on the seventh day of an attack of acute perforative appendicitis with a rather mild form of diffuse peritonitis. His general condition was so bad that it seemed as though he would undoubtedly succumb to an operation. His condition never improved sufficiently to make the operation appear safe and it was postponed from day to day until the child died three weeks after entering the hospital. It is of course possible that this patient might have recovered had an operation been performed, but it did not seem so at the time.

*Case IV.*—This patient a strong, well-nourished man, thirty-nine years of age, entered the hospital on the tenth day after the beginning of an attack of acute perforative appendicitis. He was placed on the treatment by means of exclusive rectal feeding for four days during which time he improved greatly. At the operation a universally adherent appendix was found, extending down into the pelvis. It was perforated at the end and surrounded by an abscess containing half an ounce of pus. The appendix was enucleated, the pus sponged away and the cavity drained. The operation started a violent peritonitis of which the patient died fifty hours after the operation. Had the treatment with exclusive rectal feeding been continued for a week longer, until the virulence of the infectious material in the abscess had been reduced, this patient would undoubtedly have recovered.

*Case V.*—This patient, an exceedingly obese man, thirty-eight years of age, entered the hospital on the third day of an acute perforative appendicitis, suffering from diffuse peritonitis. He had been treated with calomel and large doses of saline cathartics repeated every hour during the day preceding his admission. He was in an absolutely hopeless condition, his pulse was almost imperceptible and his temperature 103°F. He died thirty-six hours after entering the hospital. No operation was performed. This patient's death was undoubtedly due to the administration of cathartics, because the severe symptoms did not appear until after this form of treatment was begun.

*Case VI.*—This patient, a millwright by trade, thirty-one years of age, entered the hospital on the fourth day of an attack of acute perforative appendicitis with a severe diffuse peritonitis. His pulse varied from 110 to 160 and his temperature reached 105°F. He was placed on exclusive rectal alimentation and his condition improved constantly. Ten days after his admission his temperature was 99°F. and his pulse below 100. There was a swelling and an area of tenderness in the vicinity of McBurney's point. I made an incision through the abdominal wall and found the intestines so diffusely adherent to the abdominal wall and to each other and to the omentum that I abandoned the operation and simply inserted a strand of iodoform gauze for drainage and left the wound open. The patient did well for a week, when an intestinal fistula formed, a few days later he had a hemorrhage; this was repeated on the second day and again a week later. He died thirty-six days after entering the hospital and twenty-six days after the operation from exhaustion due to the repeated hemorrhages from the fistula in the small intestine. In this case the death might have been avoided had the operation been further postponed. After the first hemorrhage it seemed as though the patient's weakness contraindicated an operation for locating and tying the bleeding vessel, which, however, I believe, I should do in the future in a similar case. The case occurred during our recent epidemic of typhoid fever and for a time I thought that the case was one of perforative typhoid ulcer, but the Widal test was negative.

*Case VII.*—This patient, a woman, thirty-four years of age, suffered from a chronic recurrent appendicitis complicated with secondary infection of both Fallopian tubes. The appendix and both Fallopian tubes were removed. The ligature applied to the stump of one of the tubes cut through the pedicle formed and the patient died from hemorrhage from the left ovarian artery. This death can, of course, not be attributed to the appendicitis operation, but it is counted because the operation was primarily undertaken for the relief of a recurrent appendicitis.

A review of these cases will show that the mortality could be further reduced by eliminating errors in technic.

I am certain that the very low mortality is due to the fact that the 48 patients in whom an immediate operation did not promise recovery were placed under proper preparatory treatment before the operation was undertaken and if this plan were generally adopted I have no doubt but what the mortality in acute appendicitis would be enormously reduced.

The lowest mortality following the operative treatment of acute appendicitis by any author who has operated upon a large number of cases, whose report I have been able to obtain is a little less than fourteen per cent., excepting the experience of Mayo, whose mortality in these cases is below three per cent., which he attributes to the fact that he follows the method described at the beginning of this paper in all cases in which there is any doubt concerning a recovery if an immediate operation is performed.

This method contemplates the removal of the diseased appendix at the very beginning of the attack before the remaining portion of the peritoneal cavity has been infected in all cases in which this is possible, and in cases in which this is not possible, because the infection has already passed beyond the tissues of the appendix it contemplates changing a very dangerous acute into a relatively harmless chronic condition by inhibiting peristalsis and giving the peritoneum an opportunity to remove the existing infection by absorption or to circumscribe it by forming adhesions, at the same time reducing the virulence of the infectious material. The following table shows interesting observations which my assistant, Dr. Ralph Daniells has made regarding the effect of this form of treatment upon leucocytosis.

He is still engaged in making these observations, which will be reported in another paper. I am not prepared to state whether these observations are of much practical value. They are certainly very interesting.

These two cases which he considers quite typical were in the hospital at the same time, the second one under the form of treatment described in the beginning of this paper and the first one under a form of treatment known under the ambiguous term of expectant treatment. In both cases the leucocytes were rapidly reduced under the starvation treatment, in the second case permanently. In the first case there was a rapid increase as soon as a slight amount of calomel and a little food were given. As soon as this was again prohibited the leucocytes at once dropped rapidly.

| AGE | DATE | WHITE CELLS | CONDITION UNDER WHICH BLOOD WAS TAKEN |
|---|---|---|---|
| Male, 21 | June 6 | 17,600 | At time of entering hospital, acute perforative appendicitis fcurth day of attack. |
| | June 7 | 15,800 | Exclusive rectal feeding for twenty-four hours. |
| | June 9 | 10,200 | Exclusive rectal feeding for 72 hours.<br>Calomel given at end of this time, 2-10 grains. |
| | June 10 | 14,600 | Calomel again given June 10 also a little soft food. |
| | June 15 | 23,400 | This was continued for four days when all food and medicine was stopped by mouth on June 15th. |
| | June 16 | 20,600 | At this time the patient was operated. |

This case was under the care of a physician who did not fully appreciate the importance of absolute prohibition of even small amounts of food and cathartics by mouth at the time this observation was made.

| | | | |
|---|---|---|---|
| Male, 19 | June 11 | 9.100 | At time of entering hospital, acute suppurative appendicitis. |
| | June 12 | 5.500 | Exclusive rectal feeding employed at once. |
| | June 13 | 5.800 | Exclusive rectal feeding. |
| | June 15 | 6.000 | Exclusive rectal feeding. |
| | June 16 | 5,000 | Operated. The infection was found confined to appendix. |

This patient received the typical treatment described at the beginning of this paper.

The observations made during this year's experience again confirm the following conclusions, which are borne out by a very extensive clinical experience extending over a number of years:

1. The mortality in appendicitis results from the extension of infection from the appendix to the peritoneum or from metastatic infection from the same source.

2. This extension can be prevented by removing the appendix while the infectious material is still confined to this organ.

3. The distribution or extension of the infection is accomplished by the peristaltic action of the small intestines.

4. It is also accomplished by operation after the infectious material has extended beyond the appendix and before it has become circumscribed.

5. Peristalsis of the small intestine can be inhibited by prohibiting the use of every form of nourishment and cathartics by mouth and by employing gastric lavage in order to remove any substances of food or mucus from the stomach.

6. The patient can safely be nourished during the necessary period of time by means of nutrient enemata.

7. In case neither food nor cathartics are given from the beginning of the attack of acute appendicitis and gastric lavage is employed, the mortality is reduced to an extremely low percentage.

8. In cases which have received some form of food and cathartics during the early portion of the attack and are consequently suffering from a beginning diffuse peritonitis when they come under treatment, the mortality will still be less than four per cent. if peristalsis is inhibited by the use of gastric lavage and the absolute prohibition of all forms of nourishment and cathartics by mouth.

9. In this manner very dangerous cases of acute appendicitis may be changed into relatively harmless cases of chronic appendicitis.

10. In my personal experience no case of acute appendicitis has died in which absolutely no food of any kind and no cathartics were given by mouth from the beginning of the attack.

11. The mortality following operations for chronic appendicitis is exceedingly low.

12. Were peristalsis inhibited in every case of acute appendicitis by the methods described above—absolute prohibition of food and cathartics by mouth and use of gastric lavage—appendectomy during any portion of the attack could be accomplished with much greater ease to the operator and correspondingly greater safety to the patient.

I would make the following suggestions for the treatment of appendicitis with a view of reducing the mortality:

1. Patients suffering from chronic recurrent appendicitis should be operated during the interval.

2. Patients suffering from acute appendicitis should be operated as soon as the diagnosis is made, provided they come under treatment while the infectious material is still confined to the appendix, if a competent surgeon is available.

3. Aside from insuring a low mortality this will prevent a series of complications, mentioned elsewhere in this paper.

4. In all cases of acute appendicitis without regard to the treatment contemplated the administration of food and cathartics by mouth should be absolutely prohibited.

5. In case of nausea or vomiting or gaseous distention of the abdomen, gastric lavage should be employed.

6. In cases coming under treatment after the infection has extended beyond the tissues of the appendix, especially in the presence of beginning diffuse peritonitis, conclusions four and five should always be employed until the patient's condition makes operative interference safe.

7. In case no operation is performed neither nourishment nor cathartics should be given by mouth until the patient has been free from pain and otherwise normal for at least four days.

8. During the beginning of this treatment not even water should be given by mouth, the thirst being quenched by rinsing the mouth with cold water and by the use of small enemata. Later small sips of very hot water frequently repeated may be given and still later small sips of cold water. There is danger in giving water too freely.

9. All practitioners of medicine and surgery, as well as the general public should be impressed with the importance of prohibiting the use of cathartics and food by mouth in cases suffering from acute appendicitis.

10. It should be constantly borne in mind that even the slightest amount of liquid food of any kind given by mouth may give rise to dangerous peristalsis.

11. The most convenient form of rectal feeding consists in the use of one ounce of one of the various concentrated liquid predigested foods in the market, disolved in three ounces of warm normal salt solution introduced slowly through a soft catheter, inserted into the rectum a distance of two to three inches.

12. This form of treatment cannot supplant the operative treatment of acute appendicitis, but it can and should be used to reduce the mortality by changing the class of cases in which the mortality is greatest into another class in which the mortality is very small after operation.

710 Sedgwick Street.

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# PROMPT OPERATION IN THE BEGINNING OF THE ATTACK WILL SAVE NEARLY ALL CASES OF APPENDICITIS.

BY A. C. BERNAYS, M.D.,
OF ST. LOUIS, MO.;
SURGEON TO THE LUTHERAN HOSPITAL; CONSULTING SURGEON TO THE CITY AND FEMALE HOSPITALS.

THE opinions of surgeons and physicians in regard to the treatment of appendicitis have been recorded and published in over two thousand separate communications to the medical press of Europe and America. No doubt the other continents have also contributed their share, and a complete bibliography would require years to compile, and would be an exhibition of the greatest industry on the part of our profession. It would show a singular variety of views and of conclusions. It would also demonstrate a marked change in the views of the same observers, as well as a slow, but certain, increase of voices in favor of the surgical treatment of the disease as soon as its existence is recognized.

The reason why we have been slow to arrive at a final and universally accepted method of treating appendicitis is, that the exact pathological condition in a given case cannot be diagnosed. The existence of appendicitis can be proven in nearly all cases, and particularly is this true in the acute stage of attack. But having made the diagnosis of appendicitis, we are unable to describe or to form a reliable opinion about the exact anatomical condition which we have in the abdomen, and we cannot usually give a detailed, or even approximate picture of the pathological processes which will be found after the belly is opened. We have no method of diagnosis which will enable us to predict the exact nature of the involvement.

(1) We cannot know the position of the appendix; (2) we cannot know the size of the appendix; (3) we cannot know the shape of the appendix; (4) we cannot know whether the proximal or distal end, or whether the whole of the appendix is affected or not; (5) we cannot know whether there is a foreign body or not; (6) we cannot know whether there is stricture or or not; (7) we cannot know the exact extent of the peritonitis; (8) we cannot know whether there is a peritoneal effusion; (9) we cannot know the species or kind of infection; (10) we cannot know whether there is perforation of gangrene.

All men who have operated on more than one hundred cases will agree with the above statements; all who have operated on over five hundred cases will agree that there are many more details than I have mentioned, which they cannot know before opening a belly. Nearly all those who have operated on a few cases, will not so readily admit their ignorance, and nearly all those who have never operated on an acute case of appendicitis, but who have treated a large number without operation, who cannot possibly know anything about the exact pathological condition that they are treating will have more or less vague notions about the pathology of appendicitis, according to each one's own imagination and credulity.

Scientific investigation has nothing to do with imagination and beliefs, and dreamers and speculators are barred from our discussions. Let us listen only to those who have made autopsies either on the dead or on the living. The experience of the others is valuable in a very limited sense. It is about like that of a blind man at a horse race; he either cashes or tears up his ticket after the race, just as the physician either writes a death certificate or celebrates a cure; but neither of the two has learned a lesson which can be of use to those who come after him, searching for knowledge and advice.

Knowing that we can know little or nothing of the pathological process in the belly before it is opened, except that it started in the appendix, and knowing that we cannot foretell what course an unknown process will run, what must we do?

Before answering this question, I desire to make a few remarks closely in line with the above observations. In cases of appendicitis an exact diagnosis, if it could be made in regard to the pathological lesions present, would include the prognosis, and would indicate to us when to operate and when to proceed with expectant treatment. As I have said above, it is almost impossible in any case to make an anatomical diagnosis, particularly to foretell the exact appearance of the appendix, or to form a correct idea of the existing form and nature of the infection.

The classification of the Germans and of the French writers, for instance, Sonnenburg, into (*a*) simple, (*b*) perforative, (*c*) gangrenous, is of no value to the practitioner of medicine or surgery, because he is expected to decide whether to operate or not; and he must particularly decide whether or not the disease of the appendix, no matter in what form, will be limited to the appendix and its immediate neighborhood, or whether or not it will spread and reach the general cavity. If he could decide that the disease will be localized or limited, an operation might not be needed at once, but he cannot decide this point with reasonable certainty. The assumption that the local and general symptoms will be mild in limited circumscribed cases is true only in a restricted sense, because we do not know at what moment a rapid pulse, severe, alarming, general disturbances may set in, showing us that an apparently simple appendicitis, with no bad symptoms, may suddenly become a violent, fulminating, fatal attack. The severest symptoms are sometimes found in cases in which very insignificant local disturbances are found. Sometimes a little localized pain on pressure is all that can be found. This symptom is all that is required to justify an operation, although it does not always indicate or call for operation. I would rather defer surgical interference where there is dulness and a plain tumor, than in those cases in which there is no circumscribed tumor, but probably a liquid exudate. *The absence of a tumor is a more pressing indication for immediate surgical interference than its presence.*

Appendicitis is not a typical disease, if viewed from a clinical standpoint. In at least one-half of the cases there is no dulness to indicate the existence of an exudate or tumor in the right iliac fossa. Again, I have seen a well-defined dulness disappear in a day, an occurrence which means a decidedly dangerous change, requiring immediate operation, because the clearing-up of the dulness is most probably due to entrance of air into the abscess. Again, we see that the presence or absence of dulness and tumor are most misleading and unreliable symptoms upon which to base an exact diagnosis, or upon which to rest either an operative or expectant plan of treatment.

Whenever an operation for appendicitis is performed within twenty-four hours after the attack, it is successful in about 98 per cent. of all cases thus treated. I object to having these operations called early operations. They are always operations done at the correct and proper time. The term "early" is likely to produce opposition and objection in the mind of a timid, vacillating surgeon. These gentlemen, who like to be called conservatives, will often side with the internist in a consultation if there is talk of "early" instead of proper and prompt operation. I saw a boy die of appendicitis who would have been saved by operation, but the word "early" killed him. Words are more dangerous than knives at certain times.

In regard to the statement that an amelioration of symptoms justifies delay and may be regarded as a contraindication to operation, I have this to say: I have shown that the nature and present stage of the progressing pathological process is unknown to us, and cannot be interpreted by the most experienced of us from an analysis of symptoms. I have seen quite a number of deaths, after an amelioration of symptoms which seemed to indicate a favorable outcome of the attack. Having been refused the operation during an apparent amelioration, I have operated five, six, seven and nine days later, and have had two deaths out of four cases. I have previously said that the division of appendicitis into three classes, on pathological findings, is of no practical value. This is true, because the three kinds of appendicitis cannot be differentiated clinically, nor can the many complications of the three classes be recognized during life, except by abdominal section. An amelioration of symptoms does not justify delay in operating, because it may be only temporary, and the patient may be lost on account of procrastination.

I have not the time to touch upon those as yet too numerous cases which are first seen by a surgeon from five to fifteen days after the beginning of the disease. Here we often have the clinical picture of septicemia. The attending physician has treated the case with opium, morphine, ice-bags or poultices, and has lulled himself and the friends of the patient into a hopeful mood of security. In such thoroughly mismanaged cases it is a fight between the human organism and the toxins, and in this class of cases the Ochsner treatment is probably the best method to be followed out, because there is a probability of auto-immunization taking place. Surgery can do but little beyond draining abscesses in these cases, until later on, an interim operation for the removal of the remnants of the appendix is indicated, if the patient survives. It is these cases of septic peritonitis where the Ochsner method seems to me to find its only field of usefulness. I have used this method before and since Ochsner's publication, in cases of peritonitis in which there was intestinal obstruction, supplementing it with one or more enterostomies through which intestinal drainage and lavage could be extensively carried on. (See Address before the Iowa State Association of Railway Surgons, at Ottumwa, Iowa, 1897.)

Sprengel, at the German Congress of Surgeons, held in Berlin in April, 1902, proposed a collective investigation of the appendicitis question, and propounded the following three questions, to be answered by all operators he could reach:

1. How does the danger of the early operation compare with that of the interval?

2. Has the early operation any special dangers compared to the interval operation?

3. What are the results of early operation in comparison with the late operation, and how do the results compare in different stages of the disease?

I would answer as follows: (1) The mortality of the interval operation is very low; taking all cases together, I have had no death in over four hundred operations. It will not reach one per cent., whereas the mortality of operations during an acute attack will reach from four to twenty per cent., taking all cases together. The mortality will vary according to the indications and methods followed by the individual operators. My own mortality in the last one hundred cases was three. My mortality in 566 cases operated during the last fifteen years reaches 9½ per cent. I think it is lower now, because I do not encourage radical operations in septic cases seen late in an attack in which there is a chance to save the patient by drainage, enterostomy and gastric and colonic lavage. (2) Aside from the greater danger from anesthetics in acute cases, I would answer, no. The results of the very early operation, say in the first twenty-four to forty-eight hours, will probably be as low as those of the interval operations. I have had only fifty-six very early operations, and had only one death from chloroform among them. (3) Operations done during the first day or two are easier and more complete than later operations. The results of early operations are more satisfactory than late operations. The results are most gratifying in the worst cases of peritonitis, with free effusion, if done early enough.

In conclusion, let me say that I think this question of appendicitis can be scientifically solved when we have advanced far enough to compare similar stages and similar pathological conditions with each other, and cease trying to solve this many-sided problem as an undivided whole. My answer to the question, What must we do? is, Operate Early in the Attack!

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## MEDICAL PROGRESS.

### HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

**On Transplantation of Urine.**—The results of certain experiments performed on rats have already been reported by L. LOEB (Am. Med., March 14, 1903), who now supplements these by others. In the first series he endeavored to determine the resisting power of excised pieces of tumor to unfavorable conditions. Pieces of a sarcomatous thyroid tumor from a rat when transplanted after varying periods of sojourn on ice, all grew in their new site. The effect of heat was also tried and the power the transplanted tumors was weakened after exposure for 15 to 30 minutes at a temperature of 43° to 45° C. Pieces which after extirpation were kept in glycerin, showed positive results in only a few cases, insufficient to warrant any conclusion. The influence of bacterial products on the growth of transplanted tumors is as follows: if the infection reaches a certain severity, no growth takes place, or if not severe enough in the beginning, it will do so later. Sloughing necrotic nodules may likewise be covered by healthy tissue, and growth is slow or stops. By the injection of the fluid from a cystic sarcoma into the peritoneal cavity, sarcoma resulted in some cases and not in others, and this probably due to the fact that different tumors of similar structure may have a very different faculty to infect other tissues by mere contact. Injection of juice from tumor tissue minced in sodium chloride (7-per-cent.) solution and passed through a Berkefeld filter failed to produce any growth. The same took place if only ordinary filter paper was used. These experiments seem to warrant the conclusion that a micro-organism living outside of tumor cells and passing through the Berkefeld filter is not, in all probability, the cause of the formation of sarcoma in rats, nor is one resembling organisms like the tubercle bacillus or the blastomycetes. These would probably not be made ineffective by heating to 45° C. for half an hour. No giant cells characteristic of granulomas caused by the tubercle bacilli or blastomycetes could be found in these sarcomas. The remaining possibilities are that sarcoma is caused by an organism outside the tumor-cells, possessing, however, a similar sensitiveness to heat as the tumor cells themselves. Such, however, would have to be larger than red blood cells, as they seem unable to pass through filter-paper. The author thinks this is improbable, as microscopic examination showed no structures other than tumor cells and their products of degeneration. We may also conclude that no organism sensitive to cold can be the cause.

**Four Cases of Primary Actinomycosis of the Lungs.**—Ever since J. Israel published the histories of nine cases of primary pulmonary actinomycosis, numerous instances of this disease have been reported. In two of the cases observed by S. KASHIWAMURA (Virchow's Archiv, Feb. 2, 1903) the primary nature of the disease is easily proved. In both instances the clinical history began with catarrhal conditions in the lungs and a sequent pleurisy, and at autopsy no evidences of actinomycosis were found outside of the respiratory tract. In the other two cases, the first clinical manifestation was a pleurisy; nevertheless there were other widespread processes, namely, extensive changes in the subpleural and retroperitoneal tissues and in the ribs. These latter changes may have been secondary to the condition in the lungs. The abundance of connective tissue formation in these organs indicated that they were probably the oldest localization of the disease processes. The relatively less extension of the pathological changes in the lungs than in the surrounding tissues, does not militate against the idea of their primary nature, for it is well known that actinomycosis spreads more rapidly in the prevertebral connective tissue and neighboring parts than in the lungs. The esophagus is frequently the portal of entry for the disease, which then gradually extends deeply and penetrates the lungs. None of the author's cases showed any such course. There were in two of them genuine metastases in the liver and skin respectively. As regards the etiology of this disease, the cases reported add nothing of definite value. In two of them there were carious teeth. According to Boström the cereal grains are frequent carriers of the infective material. None of the author's cases revealed any etiological relationship of this character. The changes in the lungs showed a decided tendency to connective-tissue formation. The bronchi either show a cellular infiltration of their walls or pass immediately within the grasp of the newly formed connective tissue.

**The Origin of Fatty Changes in the Organism.**—In an investigation of this interesting subject, J. ARNOLD (Virchow's Archiv, Vol. 171, No. 2) came to the conclusion that in various processes, which have hitherto gone under the name of "fatty degeneration," the fat does not result from the disintegration of albumin, but is or can be deposited from without. The current terms, "fatty infiltration," "fatty metamorphosis," "fatty degeneration," "fattening," and the various theories regarding the origin of these changes, require a radical reform. With this in view, the author suggests the following classification of the different forms. *A. Exogenous lipogenesis,* the intracellular formation of fat according to the principle of the synthesis or phagocytosis of fat: (1) Physiological wandering of fat, corresponding to the changing nutritional conditions of the fatty supply. (2) Wandering of fat in forced feeding with fat-producing foods; various degrees of fattening (with or without secondary degeneration). (3) Wandering of fat as the result of the rupture of fat into the circulation, *e.g.,* fat emboli. (4) Pathological fat metamorphosis; fatty infiltration (the pathological destruction or construction of wandering fat according to the principle of synthesis or phagocytosis. (*a*) Simple forms (without degeneration or with reparable degeneration). (*b*) Necrobiotic forms (fat synthesis or phagocytosis, complicated with phenomena of disintegration). *B. Endogenous* (albuminogenous) lipogenesis, the intracellular production of fat from the disintegration of albumin, (fatty degeneration).

**Immunization of Cattle Against Tuberculosis.**—The effect of human tubercle bacilli on cattle has been investigated by L. PEARSON and S. H. GILLILAND (Proc. Path. Soc., Phila., March, 1903), and from their experiments they conclude that after repeated intravenous injections of cultures of tubercle bacilli from human sputum, the resistance of young cattle to virulent tubercle bacilli of bovine origin may be increased to such an extent that they are not injured by inoculation with quantities of such cultures that are capable of causing death or extensive infection of cattle not similarly protected. By intravenous injection, much larger quantities of cultures of human sputum tubercle bacilli than are necessary to confer a high degree of resistance or immunity upon the vaccinated animal, may be administered without danger to that animal. Experiments are now under way for the purpose of testing the duration of this immunity and the extent to which it is effective in protecting cattle against infection from natural sources.

**The Bacteriology of Pulmonary and Bronchial Suppurations.**—The question of a mixed infection in pulmonary tuberculosis still remains undecided. Most investigators at the present day, ascribe the destructive processes in the phthisical lung and the hectic fever to the presence of other germs. A very complete study of this subject has been made by H. KERSCHENSTEINER, (Deut. Archiv f. klin. Med., Vol. 75, Nos. 3 and 5), who examined very carefully the sputa from a large number of cases presenting suppurative processes of the lung and bronchi. The results obtained were somewhat contradictory in certain respects and are summarized by the author as follows. The flora of the sputum of a phthisical patient differs from that of other cases of pulmonary or bronchial suppurations, only in the fact that the tubercle bacillus is present in the former. The streptococci are the most frequently found germs of purulent sputum, whether derived from tuberculous or non-tuberculous patients. In tuberculous cases, staphylococci, tetragenes, and diphtheria-like bacilli are also frequently found, in non-tuberculous cases, tetragenes. The various micrococci, pneumococci, influenza bacilli, and the colon group are less frequent with tuberculosis. In non-tuberculous suppurative bronchitis, influenza bacilli and pneumococci are more numerous in comparison but the diphtheria-like bacilli and especially staphylococci, are much less frequent. A well-marked difference does not however exist. Streptothrix and blastomycetes were found sporadically. Acid resisting pseudo-tubercle bacilli and pyocyanus were not seen. Experiments were made by injecting into the trachea of rabbits, a quantity of tubercle bacilli together with *Micrococcus tetragenes.* A rapid disintegration took place in the lung, resulting in the formation of a large cavity within four weeks' time. Trials on the human subject showed that cultures of streptococcus from a tuberculous lung, which exhibited a moderate amount of virulence in rabbits, were also pathogenic for a healthy individual. This was shown by the production of a localized erysipelas at the point of subcutaneous injection. Among other things, it was also found that with undoubted pseudo-diphtheria bacilli, Neisser's granules as well as acid production, could be present, which fact invalidates the determination of these two conditions in the diagnosis of the bacillus of Löffler.

**Investigation of Perspiration.**—A series of investigations with the sweat of human beings has been made by L. BRIEGER and G. DIESELHORST (Deut. med. Wochenschr. No. 10, 1903). Their first communication is concerned with the subject of cryoscopy. Determinations of the freezing point as well as the specific gravity, in both sick and well persons, show that these two factors are entirely dependent on the amount of sodium chloride which the exuded perspiration contains. It is therefore probable that the individual variations in the osmotic pressure of the sweat are mainly governed by the varying quantities of salt which it contains. The average lowering of the freezing point of the sweat is approximately the same as that of the blood. The quantity of sodium chloride in the drops exuded at first is regularly less in amount than in those voided later on.

**Bacteriology of Scarlatina.**—A series of experiments have been made by G. H. WEAVER (Am. Med., April 18, 1903), with reference to the bacterial flora of this disease. Cultures were made from the material upon the surface of the tonsils as early in the disease as possible, and from the skin before and after desquamation. The author's observations lead to the following conclusions: (1) The bacteria obtained from cultures from the skin, epidermic scales and the surface of the tonsil in cases of scarlatina are the same as those found in the same locations in health, and no one of them is constantly present except the streptococcus in the throat. (2) Because of the numerous cocci which grow in such cultures, and which appear in groups of two or four or bunches of the same under the microscope, it is impossible to identify them, except by a complete study in pure culture. (3) Cultures made by inexperienced persons or by those who do not fully appreciate the importance of avoiding the tongue are especially apt to contain large diplococci or sarcinæ. (4) The streptococcus is present upon the tonsil of scarlatinal patients in enormous numbers in almost all cases.

**Influence of the Nerves upon the Healing of Fractures.**—Recent experimental work by Kapsamener, Muscatello and Damascelli has proven that normal healing of fractures takes place in limbs which have been artificially deprived of innervation through section of the sciatic nerve, crural nerve or brachial plexus. R. Penzo (Gazz. Osped., March 29, 1903) has studied in rabbits the influence upon osseous repair of the vasoconstrictor fibers alone, through extirpation of the superior cervical ganglion of the sympathetic followed by fracture of the zygomatic arch. For purposes of comparison, section of the fifth nerve was practised in three rabbits. The author sums up the results obtained as follows: In the reparatory neoformative process which follows fracture of the zygomatic arch in rabbits, the vasoconstrictor fibers of the sympathetic nerve play an important part. The active hyperemia following suppression of these fibers favors and hastens the formation of callus, through the proliferation of cellular elements which it induces. This indirectly favorable influence which vasomotor paralysis exercises through induction of active hyperemia, may explain the more perfect healing of fractures with impaired innervation which has been noted by some observers. Section of the fifth nerve alone has no apparent influence upon the healing of fractures; and this fact suggests the possibility that abolition of motion and sensibility alone, do not suffice to retard the process of osseous repair.

**Beriberi on Board Ship.**—Among Lascar crews this interesting disease is a common occurrence and because of the controversy as to its etiology, it is interesting to note that it may occur to all appearance spontaneously aboard ship. The case cited by D. W. K. Moody (Brit. Med. Jour., March 28, 1903), as occurring on one of the steamers of the P. & O. line, in which the Lascars have the same space as is allowed the European seamen, is of more than ordinary interest because it supports the rice theory of infection. The anemic theory is exploded. The cockroach theory has also little ground. The metallic theory supported by many intelligent men, can likewise be set aside. One is therefore, by a process of exclusion, obliged to fall back on the rice and germ theories. The author believes that rice is a prime factor in causing the disorder and that probably the germ, whatever it is, is intimately connected with the grain. Certain it is that rice alone will not give rise to beriberi, since it is unknown among the rice-eating millions of Bengal. If the scale of provisions for Lascars of the Board of Trade regulations be examined, it will be noted that rice forms the great bulk of the food, albeit the classic lime juice and other antiscorbutics are well represented. In the Japanese army and navy, in 1884 and 1885, beriberi was a serious complaint, but it was almost entirely eliminated by the introduction of barley into the diet along with the rice. There are cases on record in which the crews of vessels suffered from beriberi continuously until the rice rations were thrown overboard and a fresh supply obtained. The prognosis on beriberi must be very guarded, as it is essentially in the matter of death and recovery a disease of surprises.

**Pathological Conditions in Prehistoric Skulls.**—An interesting series of observations has been made by W. Wright (Birmingham Med. Rev., Feb., 1903), on a large number of prehistoric skulls found in Yorkshire, England, and belonging in part to the Neolithic and Bronze Ages, and in part to the Early Iron Age. The abnormalities were chiefly either of the nature of well-marked asperities for the attachment of muscles or of unusually prominent bony processes. One instance of a partially ossified falx cerebri was noted. True pathological conditions were but rarely encountered. Of all the teeth examined only one was found to be carious. The occurrence of alveolar abscesses was indicated in five cases, only one of which was due to a carious molar. The comparative immunity of the molars was seemingly due to the rapid wearing away of their crowns to a flat surface by the dirt and grit mixed with the coarsely milled grain, and by the pulps being quickly calcified. Of fractures there was only one clear case. It was an elevated fracture of the frontal bone above the right orbit and had healed with but little deformity. Several cases showed evidences of dislocation followed by subsequent deformity and well-marked depressions were also present in a number. Certain conditions suggestive of syphilis were observed. The nasal bones of one skull were unusually small and the nasal arch was sunken in. In another a diffuse smooth elevation was discernible on the buccal aspect of the hard palate. There was also a peculiar thickening of the frontal and parietal bones as they bound the coronal suture and symmetrical nodosities on either side of the anterior part of the sagittal suture. No evidences of rickets were encountered.

## THERAPEUTICS.

**The Value of Mercurial and Phenol Preparations as Disinfectants.**—The comparative value of the older and newer preparations has been made the subject of bacteriological experiment by F. Hammer (Münch. med. Woch., March 10, 1903). He employed pure cultures of *Staphylococcus pyogenes aureus* and anthrax spores, with which silk threads were infected and exposed to the action of the various compounds. The results show a greater activity of the inorganic, as compared with the organic mercurial compounds. Undoubtedly this depends on chemical combination and not on the amount of the metallic mercury. The methylphenols are more powerful than the benzophenols. It may be stated that a 5-per-cent. carbolic solution only equals in disinfecting power a 3-per-cent. creosol solution. In comparison with the mercurial compounds especially sublimate, the phenols have practically no effect on anthrax spores, but on the contrary exhibit a most marked effectiveness against aureus. It is also to be noted that lysoform is by no means as effective as formalin and shows poor results in both varieties of bacteria. The author's conclusions are that different varieties of bacteria are not affected alike by any one preparation. He points out that for each group therefore we must select the agent which has been experimentally proved to be the most effective.

**New and Unusual Therapeutic Applications of Ergot.**—That many varied disorders which have been regarded from the purely nervous standpoint are due to circulatory disturbances around and about those nervous structures whose functional derangements are noted is the conclusion reached by A. T. Livingstone (Jour. Am. Med. Assoc., March 21, 1903). He considers, therefore, that the indications do not call for nerve tonics and stimulants, but for means that tend to equalize and tone the circulation. Ergot seems to fulfil the latter requirements most satisfactorily. He has used it with success in insomnia, headaches (especially congestive), eye and ear disorders and pain in general. Morphine and opium poisoning and drug habits were also benefited, as were delirium tremens, hystero-epilepsy, chorea, paresis. He also recommends it in acute inflammatory and zymotic diseases, in typhoid, in angina pectoris, as a preliminary to operation, and in shock. The effect in all these is directed to abnormally dilated blood-vessels. The preparations to be used are the hermetically sealed aseptic bottles or the author's solution which consists of one dram of Squibb's extract of ergot dissolved in one ounce of formalin solution (1-3,000). The dose by hypodermic injection, preferably into the deltoid muscle, is from 15 to 30 minims, repeated in half hour, if necessary. The writer has seen ergotism occur in very rare cases only.

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## SATURDAY, MAY 2, 1903.

### LONGEVITY AND MEDICAL SOCIETY INTEREST.

AT this season of the year when the larger medical societies all over the country are holding their annual meetings, it is interesting to note how many of the men who were prominent in the original foundation of medical societies, who were ready to give of their energies and still more of time that was precious to them, for they were all of them eminently busy practitioners of medicine, lived to good round old ages. It is almost as if Providence deliberately made up to them for time spent in the service of their fellows by an extension of life beyond the Psalmist's limit of three-score years and ten, more than enough to compensate them for sacrifices made.

In our present issue of the MEDICAL NEWS, on the eve of the meeting of the American Medical Association, we give a place in the department of Excursions in Old New York Medicine to a portrait and short biographic note of Dr. John Stearns, founder of the Medical Society of the State of New York, from which organization, some forty years later, was to come, not a little because of Dr. Stearns' initiative, the idea of the foundation of the National organization that now means so much for professional interests in the United States.

We believe that this is the first portrait of Dr. Stearns that has ever been printed. It is a copy of an oil painting of the distinguished first president of the New York Academy of Medicine, executed in 1842 and said to be a much more faithful and lifelike "counterfeit presentment" of him than the oil painting possessed by the Academy. We owe the photograph from which this has been taken to the kindness of Dr. H. S. Stearns, of New York City, the great-grandson of Dr. Stearns, the subject of our sketch.

Like every one of the presidents of the New York Academy of Medicine for the first ten years of its existence, with the single exception of Dr. Francis, the second president, who lived to be only seventy-two, Dr. Stearns passed the seventy-fifth milestone of existence still capable of hard and fruitful labor. In fact, so many of the Academy Presidents have been almost or quite octogenarians, that it has been well said that it is practically an assurance of longevity to be elected to the presidency.

It would be interesting to know how many of the men who deservedly attained positions of honor in the prominent medical societies of the country reached a happy, hearty old age. We venture to say that the list would be a very long one, for it is the man of temperament that begets confidence in his fellow professional men who is apt to have the poise of faculties and the smoothness of disposition that guarantees against the inroad of petty annoyances and who thus escapes the attrition of worry so much more wearing on vitality than work. Meantime this simple recipe for successful longevity founded on long years of clinical experience is commended to the practitioners of the country. Take liberal, frequent doses of interest in medical society affairs and take office early and often whenever you can.

### A MODERN BLACK HOLE OF CALCUTTA.

NOT long since the city instituted a new era in public hygiene by isolating its tuberculosis patients in the old buildings formerly occupied by the Manhattan State Asylum for the Insane, situated on Blackwell's Island. Everyone appreciated that this move was one in the proper direction, but unfortunately it has served to be not only a beginning but an ending as well. By the time the various hospitals were cleansed the capacity of the new institution was overtaxed, and the end in view was defeated, for the hospitals were in a very short time again filled by consumptives.

An hour's investigation at the City Hospital on Blackwell's Island will prove a fruitful source of knowledge to those interested in matters hygienic. Disregarding the wards for the patients a peep into the quarters occupied by the "helpers" will afford interesting food for thought.

In a ward which formerly accommodated but eleven patients, there are now twenty-four cots for "male helpers" to occupy at night-time. A visitor passing through the room on an afternoon would admire the apparent orderliness of this ward with its neat little cots symmetrically placed in rows, covered with gray army blankets arranged with true military order and precision. Nightfall brings the transformation. On a summer's night the stench of this room is bad, but in winter it passes description. The men shun fresh air and lavage, and ventilation is considered more dangerous than disease. They cast their dirty clothes upon the floor and spread the dirt from them in all directions. Undressed they wander about the room in their bare feet picking up the dried sputum, and then take into their beds the bacteria of their tuberculous room-mates. How long will it take such conditions to react upon their lowered condition of vitality? The paid helper is drafted from the rank and file of the convalescent patients who are not sick enough to be kept in the wards, but who remain in the hospital for want of a better place to go. Many of them are tuberculous, and in their ignorance, they carelessly expectorate upon the floors of their dormitories and thus subject their fellow miserables to the possibility of infection. It is not difficult to conjecture the outcome of such a state of unhygienic pestilence as this. Ere long they find their way into the medical wards to succumb to the final onslaught of the white plague.

Strange as it may seem, there is entire indifference felt for the lives of these creatures, so ignorant and helpless. They are permitted to live huddled together, no measures being taken to teach them or even compel them to live hygienically. A few rules as to ventilation would help them to be more comfortable, but they are simply the world's outcasts for whom no one has a single thought. They are indeed a curious conglomerate mass. Some of them have occupied responsible positions in the affairs of this city and have in time past seen affluence. There is an ex-member of the Stock Exchange whose seat is even to-day retained in his name by his relatives. There are gradations in the social scale from the ex-financier to the congenital "hobo." All live together in the filth and mire of unhygienic surroundings.

Such a necessity as a bath-tub is not convenient enough to them to let it enter their thoughts. There is one that they may use, but it is not an exceedingly popular thought to their minds.

Back of the hospitals is a low, rambling building, constructed after the plan of weather-proof, summer, seaside cottages, which building is known as the Klondyke. Its name is only too suggestive in winter. Here are the main quarters of the male "helpers." Here, in the colder months, bronchitis, pleurisy and pneumonia are prevalent and, sooner or later, those afflicted are turned over to the tender mercies of the tubercle bacillus.

The lot of the female helpers is equally cheerful. They are housed in an old shack of an outhouse, which, in days gone by, was used by the hospital as a waiting ward for pregnant women. It is infested by mice and rats and many other varieties of vermin. The former Commissioner of Public Charities condemned this structure as uninhabitable and unsafe, ordered the patients to be removed from it, and had its doors closed. A coat of paint has been given to it, and it is now turned over to the poor miserable creatures who serve the city in the capacity of helpers for a monthly stipend varying between the liberal amounts of four and eight dollars a month.

If the services of these individuals are of any value to the city, it would seem only reasonable that this value should be increased by a little attention to their comforts or necessities. It is true that they belong to the lowest stratum of humanity, but dumb animals receive more care and attention than these unfortunates. Situated as they are, they can only act as a menace to those near them, and perhaps may infect the bodies of those whom we consider more valuable in the scale of human worth.

The recent erection of canvas tents on the grounds about the hospital is but a drop in the bucket. How long must we wait for the politicians at Albany to get their "graft" before the City's and State's poor can be taken care of?

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## THE CAUSE OF SMALLPOX.

Drs. W. T. Councilman, G. B. McGrath, and W. R. Brinckerhoff of the Harvard Medical School at the meeting of the Boston Society of Medical Sciences held Tuesday evening announced the demonstration of the micro-organism which occasions smallpox. It is a protozoan and not a vegetable cell, has, like many other protozoans, two distinct cycles of development, and can be demonstrated in the "protopustule" (the vaccination vesicle), in the papule, and in the pustule, and was once clearly seen in a photograph in the blood. Scores of actual photographs, some made with a magnification of two thousand diameters, show conclusively every stage of this double cycle in the actual tissues of the early stages of smallpox. No pure culture has been made because of the lack of a medium which will nourish the animals. The spores of the protozoan, as yet unnamed, are about one micromillimeter in diameter, the mass of the protozoan about twelve microns across. The sexes appear to be distinct, one of them developing in the cytoplasm only of a tissue cell, the other in the nucleus. The first cycle of development occurs in the cytoplasm and Dr. E. E. Tyzzer has demonstrated that the process occurring in vaccinia covers only this half of the bisexual development, vaccinia therefore being a mild disease.

Very early in smallpox a minute round object with a black center (as stained) may often be seen in epithelial cells. This multiplies and becomes a mass which soon causes the complete disintegration of the cytoplasm affected and divides into a mass of spores, of one sex only probably. In variola the nucleus then becomes infected, and the spore develops into a "ring" surrounding a vacuole. The ring grows, becomes a mass of "rings" which solidify into a solid mass more or less filling the nucleus and causes thereby the destruction of the latter. This solid mass gradually breaks up into spores which by the disintegration of the nucleus are set free and undoubtedly are present in vast numbers in every pustule of smallpox, although they are not easily demonstrable there owing to the absence of a stain which will make them conspicuous.

Thus there is demonstrated the entire life-history of this "germ" so far as it takes place in the affected tissues. The reason it has not been pointed out before apparently is that searchers have confined most of their work to the pustules and little or none of it to the tissues early in the disease, during, in fact, its period of incubation. By the time the pustule has been formed, the two cycles of development and sporulation are complete and the spore is invisible, probably in the bottom of the pustule.

Dr. Councilman thinks that this protozoan is not the only organism responsible for the phenomena of smallpox, but that the streptococcus and perhaps other of the common bacteria aid in the destructive degenerations of the disease after the lesions have been started by the highly ruinous ravages of the infecting protozoan multiplying in the tissues. Much certainly remains to be learned even with this the greatest step taken. How can a pure culture be made and through that an antitoxin? Why do the spores when they infect a monkey or a man pass through both sexual phases or cycles and when they infect a rabbit or a cow only one? How does the development in the organism of one of the sexual cycles only make that organism immune against danger from the two-cycle form of development of the protozoan which produces the highly fatal smallpox?

But answer to these questions, of so great interest both practically and theoretically to man, will come, doubtless, soon, as so many like answers have come of late. Just now, we may well congratulate Drs. Councilman, McGrath, and Brinckerhoff on their long-awaited discovery and be glad that they have added one more jewel to the crown of American learning and strenuosity in the broadening field of Medicine—learned and strenuous for the service of mankind.

## THE FOURTEENTH INTERNATIONAL MEDICAL CONGRESS.

The land of the Cid and the Alhambra has been extending a cordial greeting to the conquerors of disease during the last week. It is rather interesting to consider that where it was once valiant to slay one's fellow-men, it is now noble and worthy of renown to save them. It is also interesting to think that the hands that were outstretched, half a dozen years ago, to snatch each others lives in Cuba, are now extended in social greeting; for many American physicians and their friends have availed themselves of the opportunity to visit Spain during the International Medical Congress at Madrid, and doubtless some who met on battlefields have met again wearing honorable stripes and medals, for their mutual efforts at extermination.

We dwell with far greater pleasure on that phase of civilization that calls the healers of disease together from all parts of the world, to consult how best to preserve life, than we do on that martial spirit that thirsts to take it.

And yet, the very worst evils of warfare, even of the recent Spanish-American war, add much to the general knowledge of medicine. American physicians have profited by the "late unpleasantness," in adding to their experience an important chapter in tropical diseases and war surgery, which will save by means of preventive measures many lives that would otherwise be lost, in the oncoming tide of colonization.

We feel a little sentimental over this Congress. Paris, London and Berlin are natural business headquarters for scientific men, but the land of toreadors and cavaliers, the land of ballads and romances, the land of castles and cathedrals, of fretted stone and age-toned pictures, what has it to do with microbes and antiseptics?

And yet, the modern heroes of science have all been there, and have been fêted and honored and presented at court, and the queer world-jargon of many tongues proclaiming the new discoveries of medicine have sounded in the very halls where were once discussed the discoveries of one, Columbus, and the value of the Inquisition.

We would have given much to have been there; to have heard the echoes of past faiths and sciences in the old historic city. Our correspondents have sent us full cable reports, which we publish in detail, but our readers must call upon their imaginations to place the brilliant assembly of modern scientists in the picturesque setting of a romantic past.

## ECHOES AND NEWS.

### NEW YORK.

**Five Years for a Midwife.**—Johanna Weinz, of 154 East Ninety-second street, a midwife, was convicted last week before Justice Davis in the criminal branch of the Supreme Court of manslaughter in the first degree in having caused the death of Mrs. Mary Wenger by a criminal operation last June. She was sent to the Auburn State Prison for Women for five years. The conviction is the first of its kind for many years in this county.

**Clinic by Professor Mikulicz.**—Upon the invitation of Dr. Polk, Prof. Johann Mikulicz of Breslau conducted an operative clinic in Bellevue Hospital, on Monday, April 20, for the Faculty and students of the Cornell University Medical College. He had as cases a gastrostomy, an inguinal hernia, and a fibromyoma of the uterus. The gastrostomy was performed according to Witzel's method, which the professor appeared to consider the best. Upon the hernia he did an ordinary Bassini operation, and the other case was treated by myomectomy. The interesting peculiarity of his work was his great dexterity, as the gastrostomy and the hernia were done in an extremely short time. One of the surgeons present remarked that he had never seen a Bassini operation completed more quickly, although the case, to be sure, was of the acquired variety and presented no unusual difficulties. Cotton gloves were also noticeable as the professor's preference. These were changed as fast as they became bloodstained, but to the onlooker it seemed that considerable time was wasted in drawing on a clean pair each time. He remarked to the House Staff that for appendicitis operations he preferred the old-fashioned transmuscular and not intermuscular incision. In closing the abdominal wound he employed numerous layers of chromicized catgut sutures. This material was also used very freely in suturing the uterus after the myomectomy. In addition to the students of the Cornell University Medical College there were present most of the representative surgeons of the city.

**Odell's "Charity" Grabs.**—We quote from the New York *Sun* what "economy" means to Governor Odell in his management of the State Charities: "Another session of the legislature has come and gone, and provision under Gov. Odell's 'economy' administration has been made for the maintenance and support of the inmates of the State insane hospitals and the State charitable institutions and reformatories. The philanthropic and humane people throughout the State, who had hoped against hope since Gov. Odell assumed office that each session would witness an abandonment of the Governor's plan to hitch the administration and patronage of these institutions to his personal political machine, are more dismayed than ever at the outlook for the unfortunate wards of the State. Under the plea of economy the Governor's treatment of the State hospitals has been merciless. He has forced their appropriations to be cut down, until he at one time boasted that he had caused a saving of $1,500,000 in one year in the cost of the maintenance of these institutions. While this was shown to be greatly exaggerated, it was also clearly demonstrated that the actual reduction the Governor had caused made the appropriations for the support of these hospitals insufficient and was causing great distress to the patients. At the present time the attendants at the Gowanda and Buffalo State hospitals, who are much better fed than the patients, are on the verge of a strike because of the poor quality and the insufficient quantity of the food supplied to them. Only a few days ago the patients employed in the laundry at the Hudson River State Hospital in Poughkeepsie refused to work, because, while required to do hard labor, they had been deprived of meat at their morning meal.

"In the name of economy the Governor compelled the State Commission in Lunacy to build three-story, non-fireproof barracks for the insane at the Rochester State Hospital, in place of the safe two-story structures such as were built in this State previous to Gov. Odell's occupancy of the Executive Chamber and such as are built by progressive nations the world over.

"The medical care given to the insane has so deteriorated under Gov. Odell's administration that last year, for the first time in a decade, the recovery rate was greatly decreased from that of former years.

"The ratio of physicians to patients under this system of enforced economy has fallen within recent years from one physician to 159 patients to one physician to every 200 patients, while in other countries the ratio is one physician to every 100 or even a less number of patients.

"That this is not economy, but inhumanity masquerading in its name, is the universal opinion of the prominent men and women throughout the State who have given years of their lives to helping the State's unfortunates and who, until Gov. Odell's election, were proud of New York State's insane hospitals and charitable institutions and reformatories.

"Alleged independent newspapers of New York and Brooklyn that profess to be governed by high moral principles had no word to say in opposition to the Ramsperger bill, the progress of which through the legislature Gov. Odell secretly favored and was familiar with, but which he finally vetoed, ostensibly because it was too bad to sign, but really because he feared it might put patronage in the hands of Platt men. The purchasing agent for the State hospitals under the Ramsperger bill was to have been a relative of Mr. Platt's leader in the State Senate, and Gov. Odell evidently realized that a Platt man as the purchasing agent for the food supplies of the State Hospitals might not look with the desired favor upon the groceries and provisions furnished by the J. W. Matthews grocery house of Newburg. Under cover of the praise of these 'independent' newspapers Gov. Odell made haste to sign an equally bad bill, that introduced by Senator McEwan empowering the Governor to control absolutely, just before each fall election, all the salary increases in the State charitable and reformatory institutions. In the annual appropriation bill passed by the recent Legislature, which is awaiting Gov. Odell's approval, the Governor caused to be inserted an increase of $85,000 in the appropriation made for the wages of the employes of the State hospitals other than the officers for the next fiscal year, beginning Oct. 1. This increase was promised to the "influential" employees in each of the ten State hospitals just before election last fall if they would round up the employees of the institutions in support of the "business Governor." Here is a direct instance of the bringing of the service into politics in the worst possible way. And under the McEwan bill, which the Governor signed on Friday, the additional $85,000 appropriated for salaries will be distributed among 'the faithful' by the Governor.

"The Governor has cut the appropriation this year for the salaries of the officers and physicians of the State hospitals to the extent of $25,000, and a proportionate falling off of the recovery rate must therefore be looked for.

"The State Commission in Lunacy told the Governor that the least amount which the commission could get along with for the next fiscal year for betterments to the State hospital institutions was $1,070,000. The bill passed the legislature, and was before the Governor, carrying this amount, but the Governor caused it to be recalled by the legislature on the last day and had the amount of the appropriation cut $200,000. The patronage connected with the officers and employees of the State hospitals may be appreciated when it is stated that for the next fiscal year they will draw $1,565,000 from the State Treasury. For the present fiscal year $2.000,000 was appropriated for food and supplies of the inmates of the State hospitals. The appropriation made by the Legislature for the next fiscal year is $2,535,000.

"Apparently this is an increased appropriation for the food of the patients, but inquiry develops the fact that about one-half of the half million increase is to pay for a deficiency in the coal appropriation for this year, caused by last winter's high prices, and that the balance of the increase is simply to meet the cost of the dietary adopted for the insane patients some months ago, when it was found that Gov. Odell's "economy" administration of the hospitals was starving the patients. That dietary is still in operation in the State hospitals and is the same one under which the attendants and patients are now striking for more and better food. The appropriation for the office of Fiscal Supervisor of State Charities, an office which was established in the interests of economy, is $30,320. The appropriation for the Bureau of Charitable Institutions of the State Comptroller's office, which the new office replaced, last year was $18,300 and the year before $17,800. The latter had ten employees, the former has fourteen, including the Fiscal Supervisor himself, at a salary of $6,000, and his secretary, at a salary of $3,000. The salary of Major George W. Hobbs, who was the head of the charitable bureau in the State Comptroller's office, was $2,500 only, and he is employed by Mr. Bender at the same salary and is the brains of the Fiscal Supervisor's office. All these things are related simply to show the practical working of the 'business Governor's' brand of 'economy,' when he makes a few places for those who can be intrusted to support his unsavory political machine, which he hopes may yet land him in the Presidential chair at Washington.

"While thus depriving the insane of proper care and food and housing, Gov. Odell forces an appropriation of $50,000 through the Legislature to pay the expenses of a glittering 'electioneering jaunt,' of which the Governor himself is to be the central figure, to attend the St. Louis Exposition."

## PHILADELPHIA.

**Friend's Asylum.**—Dr. S. D. Ludlam of Baltimore has been appointed House Physician at the Friend's Asylum for the Insane, Frankford, to succeed the late Dr. Carncross.

**Norristown Hospital Wins.**—The long pending suit of the Norristown Insane Asylum against the City of Philadelphia has been decided by the Supreme Court in favor of the hospital. The suit was for $67,000 for the care of insane patients.

**Scale of Telephone Charges.**—It is said that the Allegheny County Medical Society has unanimously adopted a scale of prices for its members who give advice over the telephone. The charges range from $2 to $5.

**Clinics by Distinguished Surgeons.**—Two noted European surgeons will hold clinics at the Jefferson Hospital on May 9 and 16 at 1 P.M. On the former date Professor Hans Kehr of Halberstadt, Germany, will operate on cases of gallstone, and on the latter Professor J. von Mikulicz-Radecki of Breslau will give a clinic on carcinoma or other surgical diseases of the stomach and intestines.

**State to Aid in the Suppression of Smallpox.**—For the information of Boards of Health and of School Boards organized as Boards of Health for the suppression of smallpox, as to what extent and in what manner they may receive State aid in coping with this disease, Dr. Benjamin Lee, Secretary of the State Board of Health, has had printed in pamphlet form the regulations adopted by the State Board for controlling the disbursement of the special fund of $50,000 placed at its disposal to aid in this work. It sets forth that the fund shall not be used for any other purpose than for assisting local communities during the prevalence of smallpox and for meeting just and reasonable expenses incurred in the suppression of that disease. School Boards acting as Boards of Health applying for aid must furnish sworn evidence that they have organized formally, and have adopted sanitary measures and appointed a paid sanitary agent. In no instance will the State Board of Health assume the entire expense of suppressing the disease in any particular locality, and it is expressly stipulated that no unvaccinated person shall be appointed to any official position charged with carrying out preventive measures.

**Hemolymph Nodes and Their Relation to Adipose Tissue.**—An exceedingly interesting address, illustrated by lantern and microscopic slides, on the above subject, was delivered before the Pathological Society of Philadelphia at the annual conversational meeting, April 23, by Dr. A. S. Warthin of Ann Arbor, Mich. Dr. Warthin reviewed the various interpretations of the nature of these nodes, and gave his reasons for believing that they are organs sui generis. He has found them in everybody that he has examined—nearly 150. They may not be seen in fresh tissue, hence it is well to fix the fat of the regions where they are commonly found in formalin, after which they may be located. The nodes are apparently constantly changing, their instability being a prominent feature. Dr. Warthin considers the finding of the so-called interscapular glands by Hatai as of great importance, as they furnish embryologic proof of the transformation of fat into hemolymph nodes.

## CHICAGO.

**Internes for Cook County Hospital.**—The examinations for interneships in this hospital on April 17 resulted as follows: Rush Medical College secured six places; Northwestern University seven places, and the University of Illinois three places.

**Phototherapy.**—Dr. Frank Hugh Montgomery read a paper on this subject before a recent meeting of the Chicago Medical Society. Carefully tabulated reports of 800 cases of lupus vulgaris treated at the Finsen Light Institute in Copenhagen show the light to have been of benefit in all but two or three per cent. About 70 per cent. are reported as cured, though in about 20 per cent. the diseases returned after varying intervals. Recurrences were due chiefly to reinfection of skin from mucous membranes, which, in most situations, are not accessible to the light treatment. Recent improvements in the original apparatus have increased the power and efficacy of the light about fourfold, the number of treatments required for a given class of cases being about one-fourth the number formerly required. A smaller lamp has been designed by Professor Finsen and Dr. Reyer for the treatment of a single patient at a time, and is equally effective with the larger apparatus. The principle is the same, requiring exposure of an hour each to a single area, and the constant attention of a trained assistant. Many other lamps have been designed to render the treatment more rapid and less expensive. Some of these lamps do excellent work, on superficial lesions, but none has the penetrating power of the original Finsen apparatus, in which a larger volume of light is condensed and applied to a small area. Lamps with iron electrodes give a light, rich in ultra-violet rays which have remarkable bactericidal powers, but which do not penetrate below the epidermis. The influence of the light is due to a stimulation of cells rather than to the direct effect on bacteria. The histologic changes are practically those of simple inflammation, which is never severe enough to destroy normal connective tissue. Phototherapy is the treatment to be chosen before all others in the treatment of all tubercular lesions of the face, because it is effective, is without danger, and gives the best possible cosmetic results. It is effective, also, in some cases of lupus erythematosus, alopecia areata, rosacea, vascular nevi, superficial epitheliomata, and indolent ulcers. The red light (exclusive of actinic rays) treatment of smallpox has, in a considerable number of cases, apparently prevented suppuration, secondary fever, and pitting, and shortened the course of the disease. To be effective, the actinic rays must be absolutely and continuously excluded; the photographer's sensitized plates hung in the room with the patient should, at the end of the treatment, show no influence of white light.

**Laparotomy Convalescence, with Reports of Twenty Illustrative Cases.**—Dr. R. W. Hardon read a paper on this subject before the Chicago Medical Society, April 22. A large percentage of abdominal cases operated upon by the writer during the last four years have been allowed to get out of bed in from one to four days following operation, and in none have any but the best results been seen. Marked increase in the comfort of the patients in every way was noted following this line of procedure. Patients left the hospital stronger, and were sooner able to resume their occupations than had been observed to be the case when kept in bed in the recumbent posture for a much longer time. The additional comfort of the patient comes from being able to have more complete bowel movements, consequently less flatus and distress from this often troublesome feature; from the change of position and avoidance of any bed pressure symptoms; from a less nervous condition incident to keeping patients as confined as is the custom; from an absence of muscular weakness caused by an atrophy of disuse. In the cases enumerated, there are 6 of appendicitis; 2 cases of hysterectomy with abdominal incision, in one of which the bladder was opened both abdominally and vaginally; one case of hysterectomy with vaginal incision; two cases of multiple ovarian cysts, one of which also had a hysterectomy for fibroid tumors; four cases for removal of pus tubes; one case of femoral hernia, in which a portion of the bladder was excised; one case of double inguinal hernia; a case of right inguinal hernia; two cases of gall stones in the gall bladder and ducts. The ages of the patients varied from five to over sixty-five years. Some of the patients were allowed to have movements on the jar, or commode, out of bed, within twenty-four hours, and all within the first four days following operation. The author's conclusions are: (1) That early getting out of bed tends to produce greater comfort to the patient; (2) shorter stay in the hospital; (3) earlier convalescence and consequent ability to resume usual occupations; (4) less danger of adhesions; (5) less expense to patients and charity institutions; (6) practically no atrophy of muscles from disuse; (7) facilitates nursing.

## GENERAL.

**Plague at Mazatlan.**—The plague at Mazatlan is stamped out, and its reappearance is not expected by the Government health authorities. From the beginning of the outbreak until Jan. 31 there were 165 deaths; during February, 50; March, 13; April, 2. Over three hundred houses were burned in Mazatlan alone, for which upward of about $100,000 was paid.

**Economy Society Sells Out.**—All the holdings of the Economites in the Sewickley valley are said to have passed into the hands of a syndicate of Pittsburgers, the price paid being $2,500,000. The senior trustee, John S. Duss, of the Harmony Society, as the organization is called, is said to have been the moving spirit in the sale, which carries with it the title of 2,600 acres of land, including the town of Economy. Only a half dozen members of the celibate society of Economites are living, and it is assumed that the sale of the land means the practical winding up of its affairs after an existence of more than one hundred years.

**An Enlightened Legislature.**—The principal action in the Virginia House last week was the passing of the Harvey Medical bill, which is a defeat to the Christian Scientists and puts them out of the pale of the law. This bill compels all persons practising medicine or the art of healing in this State to stand an examination before the State Board of Medical Examiners, who grant all licenses to practice. As none of the "Christian Science doctors" are trained physicians, this provision virtually bars them from practising their profession in this State. The Christian Scientists and their friends have fought the measure with all the means at their command. One prominent lady "Scientist" declared publicly that she would continue to practice the healing art, law or no law, and would go to jail if necessary to show her defiance of the measure.

**Smallpox Etiology.**—The Philadelphia *Press* is quoted as saying: "'If Prof. Councilman, the distinguished pathologist of Harvard Medical School, can prove that the germ of smallpox is a protozoan—the lowest form of animal organism,' said Dr. William M. Welch, physician-in-chief of the Municipal Hospital, yesterday relative to a dispatch printed in the *Press,* announcing such a discovery, 'then he has done something for which scientists will honor him.'"

**Joint Research in Physiological Chemistry.**—Dr. Arthur Gamgee, fellow of the Royal Society of England, the distinguished emeritus professor of physiology in Owens College, Victoria University, England, last week began at the Johns Hopkins Medical School his consultation with Dr. Walter Jones, associate professor of physiological chemistry in the Johns Hopkins University. Dr. Gamgee had come to the United States mainly for this purpose. As a result of joint work done by Drs. Gamgee and Jones on the occasion of the former's previous visit, a most interesting chemical relation was discovered between the nucleins and the nucleo-proteids, which has suggested a very fruitful field for future research, and the two scientists are now preparing to apply to its solution the physical methods of the polariscope to disclose relations hitherto hidden from students of chemistry. Dr. Gamgee will remain in Baltimore a few days to outline a plan of individual work for himself and Dr. Jones, and he will then leave for Europe. Both will thereafter carry on their labors in conjunction, though on different sides of the Atlantic. Dr. Gamgee, who is a leading authority on hemoglobin, some time ago made, as one of his chief investigations, a photographic study of the spectrum of hemoglobin and its derivatives. Drs. Gamgee and Jones are undertaking the investigation of five compound proteids belonging to the group of nucleo-proteids known to be the constituents of the nuclei of cells. These were found also to be dextro-rotatory, so that, contrary to the traditional belief that all proteids are levorotatory in character, at least five substances (and perhaps more) intimately connected with the life process were shown to be dextrorotatory.

**Tuberculosis in Baltimore.**—Methods of dealing with and preventing the spread of tuberculosis were discussed at a meeting held last Friday in Baltimore. The meeting was designed to have an educational influence on the community at large. Dr. William Osler and Dr. Henry Barton Jacobs composed the committee. Dr. Herman M. Biggs of New York told what is being done to check the spread of consumption in that city, and Health Commissioner James Bosley spoke of the local problem. The subject will also be discussed by Dr. William H. Welch, president of the State Board of Health, and Dr. John S. Fulton, secretary of that body, and by Dr. William S. Thayer, president of the tuberculosis commission.

**Prize of $1,000 for Dr. Sabin.**—Dr. Florence R. Sabin, assistant in anatomy at the Johns Hopkins University Medical School, has been awarded the prize of $1,000 offered two years ago by the association formed for promoting scientific research by women. The association met at Smith College on April 18 and the award was decided on by 12 professors, representing the biological, chemical and physical sciences. Dr. Sabin was in competition with 10 others. She presented the results of an investigation on the origin of the lymphatic system, embodying a discovery of far-reaching importance. Dr. Sabin is a graduate of Smith College and took the degree of M.D. at the Johns Hopkins. She is the first woman to be appointed an instructor at the medical school. She held the woman's fellowship in anatomy there in 1901. Recently she declined an offer of the professorship of anatomy at the Woman's Medical College, of London, preferring to continue her work at Johns Hopkins.

**Sanitation and Better Dwellings.**—At a recent meeting of the American Institute of Social Service Mr. Robert Garrett was appointed a member of the American committee which is to cooperate with the sociological workers of other countries in the International Housing Congress, to be held in Paris, from July to November next, at the Grand Palace in the Champs Elysées. The congress is to take place under the patronage of the French Government, with a special regard to the importance of inaugurating preventive measures against the spread of tuberculosis and alcoholism. The chief work of the American committee will be the preparation of an exhibit of data as to what has been done to solve the housing problem in this country, with copies of laws passed in various States, models of improved tenements, etc. Richard Watson Gilder, of New York, editor of the "Century," is the chairman of the committee, and the other members are Albert Shaw, New York; Carroll D. Wright, Washington; Stanley McCormick, Chicago; Robert Garrett, Baltimore; Talcott Williams, Philadelphia; M. E. Ingalls, Cincinnati; William B. Howland, Dr. E. R. L. Gould and J. H. Hyde, New York. The official announcement of the congress says among other things:

"The two great diseases that menace the future lives of the race—tuberculosis and alcoholism—have their origin for the most part in the unhealthy and pitiable lodgings of the workingmen.

"This question of improved dwellings touches all problems that concern the comfort and the hygiene of cities—cleanliness, sanitation, purity of water supply, systems of drainage, facilities of traffic. It is not merely a few citizens who are demanding such reforms; the public generally see their need. We are living according to past traditions—imperfect and inadequate for our times. While this order of things continues, little can be accomplished.

"What is now needed to advance this question of housing is a practical demonstration. This exhibition will be aided by some of the most prominent men of the day, and the exhibits will be most important in arousing public interest in the amelioration of the condition of the workingman and the general well-being."

**Stammering.**—M. Chervin has studied the whole subject of stammering and allied affections in a stout volume of 550 pages lately printed in Paris. His statistics are curious. As stammering is a cause of exemption from military service it is possible to determine its frequency in different nations. It appears that of 1,000 conscripts examined, the number rejected is as follows:

| | Per 1,000. |
|---|---|
| France | 7.50 |
| Switzerland | 3.23 |
| England | 2.87 |
| Austria-Hungary | 2.2 |
| Belgium | 2.1 |
| Italy | 0.86 |
| Russia | 0.19 |

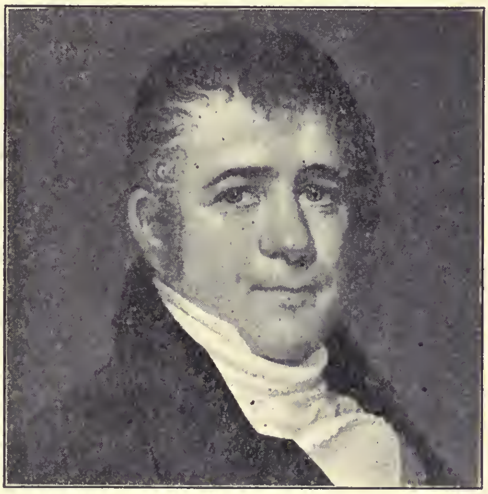
Comparing these numbers with those that represent the frequency of nervous affections, he finds that in France the nervous affections are exactly twice as numerous as the cases of stammering; in Belgium they are four times more numerous, in Italy seven times, in Switzerland eight times, and in Russia thirteen times. No statistics of stammerers in the United States are given, but it would seem that the number per 1,000 must be very small, while the number of nervous affections would probably be considerable.

**Obituary.**—Dr. Franklin A. Sherman died April 22, aged seventy-four years. He was born in Castleton, Vt., and was a grandson of Dr. John Woodward, a famous physician in that town in the early years of the last century. Dr. Sherman was a cousin of the late Rear-Admiral John Woodward Philip, and of Commander Edwin T. Woodward, retired, of the United States Navy.

## SPECIAL ARTICLE.

### EXCURSIONS IN OLD NEW YORK MEDICINE.—III.

THROUGH the kindness of Dr. H. S. Stearns, a great-grandson of the first President of the New York Academy of Medicine, whose attention was called by our article in the last Excursions in Old New York Medicine to the lack in our published medical records of any portrait of this grand old man of New York Medicine, we are enabled to present to our readers the first portrait of Dr. John Stearns ever published. It is taken from a photographic copy of an oil painting in the possession of his grandson, and is said, by those who knew the man, to be a much better likeness of him than the oil painting at the Academy of Medicine.



DR. JOHN STEARNS.

The best tribute to Dr. Stearns is that of his personal friend, Dr. Francis, one of his successors as President of the New York Academy of Medicine, in his address on Old New York (published by Widdleton, N. Y., 1866), which contains so much that is of interest in the medical history of those times. Dr. Francis said:

"Like the Historical Society, the Academy of Medicine selected at its organization a venerable head as its first president, John Stearns. He had fulness of years, weight of character, and corresponding experience, and could look back with satisfaction on an extensive career of professional service. He was a native of Massachusetts and born in 1770. He was graduated in the arts at Yale College, in 1786. He attended the lectures of Rush, Shippen, Kuhn, and others of Philadelphia, but did not receive the doctorate until 1812, when the Regents of the University of New York conferred on him the honorary degree of M.D. He commenced the practical exercise of his profession at Waterford, afterward at Albany and at Saratoga, and finally settled in the City of New York, where he maintained the reputation of an honorable, devoted, and benevolent physician until the close of his long life in March, 1848. His death, which was greatly lamented, was occasioned by a dissection wound, arising from his zeal to arrive, by a post-mortem examination, at more certain pathological conclusions, in a case of singular interest. He met this unexpected disaster with exemplary forbearance, and experienced the consolation of a Christian's hope in his final departure. The Academy paid appropriate funeral honors to his memory, and the Rev. Dr. Tyng, of St. George's Chapel, of which Dr. Stearns had long been a member, delivered an appropriate discourse on the life and character of the "Good Physician."

Great as was the devotion paid by Dr. Stearns to practical medicine, he was in earlier life enlisted in political affairs; and we find him in the Senate of the State of New York in 1812, and a member of the Council of Appointment. Shortly after the organization of the State Medical Society, he delivered the annual address as President. He was for many years a trustee of the College of Physicians and Surgeons. His name is recorded as one of the founders of the American Tract Society, and he took a deep interest in the welfare of the Bible Society, and the institutions for the benefit of the Deaf and Dumb. The annals of charity include his name in other institutions of a benevolent design. His philanthropic spirit can not be questioned. His writings on the profession, and on subjects of a kindred nature, are scattered through the periodicals of the times. He is indissolubly associated with an heroic article of the materia medica, the virtues of which his clinical sagacity first brought to notice. His brief paper on Catalepsy attracted the attention of the learned Dr. Good. This short sketch must suffice to show that the Academy were judicious in the choice of their first officer, and both his inaugural address and the manner in which he fulfilled his trust, soon dismissed all doubt as to the wisdom of their suffrage. This venerable man gave dignity to the meetings; his courteousness secured deference and maintained authority; his knowledge and impartiality added fairness to debate, and increased the gratification of intellectual association."

#### DR. ISAAC WOOD AND DISSECTION MATERIAL IN THE EARLY DAYS.

Dr. Isaac Wood, who was the fourth president of the Academy, elected in 1850, when the presidential term was for a year, and then in 1853, elected for a second time, the first president of the Academy to be given the honor of reelection. Dr. Wood was known especially for his interest in medical societies, and for the time he devoted to charitable organizations of various kinds. He was one of the most prominent founders of the Society for the Relief of the Widows and Orphans of Medical Men. He was its energetic secretary, and subsequently its president.

When the cholera broke out in New York in 1832, Dr. Wood, who had foreseen its arrival, predicted its ravages at Bellevue Hospital. In confirmation of his apprehension, out of 2,000 patients, prisoners and maniacs, 600 died. It was not long before Dr. Wood himself fell ill of the disease. Forty bodies lay in the dead house at one time, the undertakers not being able to make coffins fast enough to bury them as they died, and in one instance the dead and the sick lay in the same bed. On not a few occasions Dr. Wood, while going through the wards was obliged to step over the dead and the dying, who were lying in rows on the floor, the nurses not having time to prepare beds, as the patients were taken so suddenly. As a result of the effects of the cholera upon his constitution, Dr. Wood was not himself for some five years afterward. For nearly ten years before his resignation as visiting surgeon to the institution he had done practically all the operations at Bellevue.

Dr. Wood's faithful application to his varied professional duties, later in life, are only a continuance of the habits acquired as a medical student. He is a striking example of the work accomplished by the medical men of his generation, who in spite of drawbacks of many kinds and lack of opportunities, to say nothing of positive discouragement, succeeded in raising the standard of medical study, inspired others with their own enthusiasm for professional progress and thought nothing too much that promised to be helpful for the development of American Medicine, whose brilliant future he seems to have foreseen, even in those trying times. If there was any truth in the popular impression that long-continued hard work shortened life we should expect to find many of his contemporaries among the geniuses prematurely carried off, while on the contrary, most of the great men lived to be long past the psalmist's limit, some of them, like Dr. Wood himself, living in the enjoyment of good health beyond their seventy-fifth year.

DR. ISAAC WOOD.*

It sounds almost like a story of the student life of medieval times to hear of the eagerness with which Dr. Wood, in his medical student days, improved every opportunity to gather anatomical knowledge. In order to have the opportunity to see completely every dissection, he would not infrequently go day after day from dinner to dinner, 24 hours without food. "Often did he scale," says Dr. Francis, "the hospital gate at four in the winter morning, to study with his colleague, Dr. J. C. Bliss, until sufficient light permitted him to attend and prescribe for the patients, after which he went to breakfast."

Like a number of the other New York men of the early days, Dr. Wood graduated under the authority of and received his diploma of Doctor in Medicine from Queens, now called Rutgers College, of New Brunswick, N. J. In the early part of the century the New York medical institutions had not the authority to grant medical diplomas. This seems all the more curious to us now, when New Jersey is one of the few, especially of the Eastern States, that has no medical colleges, the State laws providing no legal method, we believe, for obtaining dissecting material.

Dr. Samuel W. Francis, in his biographical sketches of distinguished living New York physicians (published by George P. Putnam & Son, New York, 1867), gives some account of Dr. Wood's experiences in the obtaining of material for dissection purposes in the first quarter of the century. It might readily be anticipated that such experiences would shorten life. Yet, as we have seen, Dr. Wood lived on to pass the three-quarter century mark. Dr. Wood told a friend that he had often been obliged to cross rivers, travel for miles and when night clouded vision, dig up the body of some poor creature, when the weather was so cold that his companion, who was on the lookout, had to run up and down to prevent freezing. And even then, when the body was secured, the grave covered up and smoothed over and the dead man placed in a wagon, wrapped in a cloak and sitting by his side, like some pale traveler, his friend must leave him, for neighbors were on the scent and he had to drive some twelve miles with a coroner's jury theoretically by his side and a verdict of "guilty" staring him in the face. Should the horse fall, or some obstacle arrest his progress, or should he grow sick, all would be over. On one occasion, in this city, he went out with two other students, and having obtained a body from Potter's Field, tied its hands and feet together and fastening it (a small subject) around his neck so as to be suspended in front, threw a large cloak or mackintosh over all, and walked down Broadway at night, locking arms with his two friends and passing within three yards of the night watchman, who looked upon them and their singing as gay and festive youths returning from a carousal.

This matter of providing sufficient dissecting material for teaching purposes constituted one of the greatest stumbling blocks to the proper training of medical students in the early part of the nineteenth century. Some of the stories of adventure in the quest of bodies, undertaken by men who were later to be the leaders of the profession here in New York, show how many risks were taken by our ancestors in medicine for the purpose of teaching properly and satisfying their own thirst for exact scientific knowledge as far as it was possible. There is no chapter of medical history that reflects more credit upon the medical men of that time than these stories of body-snatching, that we cannot read even at this distance of time without an eerie feeling of repugnance. Not a few embryo presidents of the New York Academy of Medicine risked their reputations in the community, exposed themselves to the dangers of infectious diseases (much less understood then than now and consequently more blindly and unreasonably feared) stood cold and fatigue and loss of sleep, to say nothing of the unsavory character of their work and often of the companions they had to employ and sometimes even incurred the danger of fatal injuries from infuriated mobs in order to obtain dissecting material for teaching and personal study and investigation.

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*We are indebted to Mr. Arnold Wood, of the firm of Wm. Wood & Co., Medical Publishers, for the plate of this portrait. It is a copy of an old daguerreotype, which is said to be the only portrait of Dr. Wood extant.

Nothing in the careers of these noble men of science shows more clearly the indomitable character of their enthusiasm for right teaching and their insatiable desire for exact information. Some of the sacrifices made in this way are worthy to be matters of record for all time, as an example to future generations of physicians of the difficulties encountered by our predecessors and the way they were overcome. It was almost as dangerous to be known as a dissector in New York City in the early part of the nineteenth century as it was in old Athens and Rome in Aristotle and Galen's times.

## CORRESPONDENCE.

### TRANSACTIONS OF FOREIGN SOCIETIES.

### German.

LEUCOCYTOSIS IN ACUTE DISEASES—RESULTS OF PARADOXICAL EMBOLISM—VALUE OF ADRENALIN IN SURGERY, ESPECIALLY FOR LOCAL ANESTHESIA.

Herr FRANKE, at the Dresden Society for Natural Science and Medicine, Jan. 24, presented a paper on the subject of Leucocytosis in Acute Diseases. The author stated in order to corroborate the observations which Curschmann presented to the medical world in 1901 concerning the significance of leucocytosis during appendicitis, he had himself collected the following data from the patients in the Surgical Division of the City Hospital. Among 24 typical cases, marked increase in the leucycotosis totally failed in only four. In three of these four the attack of appendicitis disappeared entirely without any surgical interference. In the fourth an operation was finally performed because there were persistent threatening symptoms, but it disclosed no collection of pus. In eight of the patients there was a distinctly marked increase in the number of leucocytes, even up to between 15,000 and 22,000, but this observation was only a passing incident. These patients, likewise, were cured without operation. The variation in the leucocytosis is to be explained by the facts either that there was no pus-formation whatever, or that it rapidly evacuated spontaneously. Of the remaining 13 patients 11 had large abscess-formations. Nine of these had absolutely frank leucocytosis, whereas in the other two this symptom failed. The author, therefore, comes, on account of these observations, to the following conclusions, which, on the whole, agree with those of Curschmann already alluded to. Appendicitis runs its course in a very small minority without any leucocytosis whatever. Should leucocytosis occur, however, and especially should it persist at the later period of the disease, the probabilities are all in favor of the presence of an abscess at that time, although at the same moment the other symptoms of abscess-formation may be totally wanting. Consequently, the value of the blood-count during this disease is very high. After describing the details of his method of taking the blood-count in this disease, the author briefly stated his results in twelve observations on leucocytosis during typhoid fever. In ten of these persons the leucopenia was developed. In three, only 1792, 2360 and 2500 leucocytes were found, respectively. He also referred to the fact that leucopenia is recognized now by many authors as one of the signs of this disease.

Herr SIMMONDS, at the Biological Section of the Physicians' Society at Hamburg, Jan. 20, 1903, presented a paper on the Results of Paradoxical Embolism. He stated that occasionally during autopsies on cases of various primary diseases and neoplasm-formations in the course of the general circulation as distinguished from the pulmonary circulation, one comes upon emboli in the general circulation, without there being any signs that the lesser or pulmonary circulation has been affected. Naturally, the observer then asks how it was possible for so large a particle to pass up the vena cava into the right heart, to make from this point the circuit in the lungs, to reach the left heart and then pass through the aorta to its point of lodging. Cohnheim was the first to call these crossed or paradoxical emboli, and to point out the possibility of their passing through an open foramen ovale, which it must be remembered, occasionally remains patent, and would therefore make a direct passage from the right auricle into the left auricle. After him, authorities like Klebs, Vonome, Marchand, Lipps, Zahn, Hauser, Schoull, and others reported cases which proved the correctness of this supposition. In a similar manner Simmonds presented the following preparation as proving this contention: An old woman died of embolism of the lungs a short time after a herniotomy. The main trunk of the pulmonary artery was entirely filled with a convoluted clot; another clot about 17 c.c. long still lay in the right heart, and one branch of it extended into the inferior vena cava, while another branch of it passed up into the region of the foramen ovale, and had become fixed there. When the left auricle was opened it was found that this branch of the clot extended through the septum, into the left auricle, and hence there was observed a well developed penetration of the clot from the right into the left auricle, and in this manner proved beautifully the paradoxical embolism theory. The author observed that the clot had not penetrated through the foramen ovale itself, but through one of the small secondary openings which usually pass between the two auricles.

Herr BRAUN, at the Medical Society in Leipzig, Jan. 30, 1903, presented a paper on the Value of Adrenalin in Surgery, especially for Local Anesthesia. The speaker began by reference to various experiments upon animals, whose value he briefly stated in the following terms: If any local anesthetic like cocaine is injected into tissues whose vitality has been diminished by decrease in the quantity of blood flowing through them, for instance, by means of ligation of the extremities, or cold locally applied, or adrenalin, the intensity of duration of the local anesthesia is very greatly increased over what they are when the undiminished blood-current is flowing. This phenomenon depends upon the following factors: (1) Decreased absorption by the blood at the time of its application. In other words, it remains in situ much longer, and is absorbed much more slowly, and has, therefore, the opportunity of continuing its activity. (2) All those influences which the body brings to bear resist the invasion of foreign material, and to return the tissues to their normal state are temporarily interfered with. With the increase in the local result of the cocainization there is also a decrease in its toxicity; first, because the poison is taken more slowly into the system, and, secondly, because relatively less cocaine is really required to bring about the same degree of anesthetization. The author then spoke of the pharmaceutic and therapeutic relations of adrenalin and likewise its physiological action in the body as a means of stimulating the heart, increasing contraction of the uterus, and stopping hemorrhage, and as a substitute for the older Esmarch method of controlling hemorrhage locally. He stated that a 0.1 of 1 per cent. solution of adrenalin chloride, as sold by Parke, Davis & Co., is permanent if protected from air and light, and may be sterilized by boiling. His tests show that in healthy human beings solutions as feeble as 1 in 100,000 will produce a marked decrease in the amount of blood in the tissues. If it is introduced after Schleich's method of infiltration the drug produces no damage whatever to the tissues, and even when used pure, does not cause local anesthesia. No special idiocrasy has been observed in healthy persons after giving 0.5 c.c. of 1 in 1,000 solution or 10 c.c. of 1 in 10,000 solution. In patients a concentration of 1 in 10,000 and a dose of 0.5 c.c. of a 1 in 10,000 was not exceeded; consequently no unfavorable results were ever seen. If to cocaine or to eucaine adrenalin is added, an enormous increase in the local anesthesia is at once observed. Weak solutions of cocaine extend with its aid their anesthesia over a much larger area, and for a longer time than they do alone. A series of experiments in animals indicated that the systemic toxic effect of cocaine is much decreased by administering adrenalin at the same time. Tropacocaine deprived adrenalin of its power of constricting vessels, and therefore should not be mixed with it. Since October, 1902, Braun has been using cocaine and adrenalin in 150 cases, as follows, for local anesthesia: He keeps a 1 in 1,000 adrenalin solution in a sterilized brown glass bottle with a dropper attached, and adds it to the cocaine according to indications at the time it is needed. If an intense degree of cocainization is needed, three drops of the adrenalin solution are added to the 1-per-cent. cocaine solution, resulting in a practically 1 in 10,000 solution of the adrenalin. If it is desired to use a 0.1 to 0.2 per cent. cocaine solution for the infiltration anesthesia, after the manner of Schleich, 10 c.c. of the cocaine are taken and three drops of the adrenalin solution added, resulting in a 1 in 100,000 adrenalin solution. More than 15 drops of the 1 in 1,000 adrenalin solution should not, as a rule, be put into the tissues at one time, and as a rule the strength of the adrenalin solution should not exceed 1 in 10,000. One point which he observes in common in all his patients is that this mixture makes the anesthesia persist nearly an hour, thereby making the duration of cocaine anesthesia alone, without the adrenalin added seem unusually short. This mixture was applied first to the extraction of teeth and found to excel all other local anesthetics. It was applied by injecting 0.5 c.c. into the gums in front and about the teeth, as high up as the root, making the gum over a considerable area white and without sensation after a few seconds. After a delay of five or ten minutes, the tooth may be extracted, irrespective of its condition, without causing pain, provided, of course, that a well-ordered injection was made. Patients whose eyes were covered knew of the operation only when shown the tooth, and felt the cavity with the tongue. Bleeding from the cavity is almost nil, and secondary hemorrhage was not observed. A few failures were noted with the molar teeth, in cases where a proper injection could not be carried out, because the alveolar process overhung the mouth-cavity too much. Injected around a boil or abscess the following solution was found to work admirably: 0.2 to 0.5 per cent. of cocaine in 1 to 10,000 or 1 to 100,000 adrenalin according to the amount to be injected, was found to make an admirable anesthetic for operation, after waiting five or ten minutes. Bleeding also was not observed. Such a boil may be in this manner opened without a single drop of blood being lost. One injection made into the face, at the angle of the jaw, subcutaneously, produced anesthesia of the same side, which lasted three hours. A very active result was observed with the mixture when injected over the course of nerve trunks. An obliquely placed anesthesia of the finger resulted when, at the base of the finger, 1 c.c. of the 1 to 1.5 per cent. cocaine and adrenalin solution was injected, and a pronounced anemia of the finger occurred; bleeding, even here, was very little. Occasionally the absence of blood in the finger is as marked as when a rubber tube is tied about the base of it. Lermoyez has fancifully called adrenalin the alkaloid of Esmarch's bloodless method. Not only may the nerve trunks within the subcutaneous facia be affected, but also those that lie still more deeply. The manner of proceeding previously for this purpose was, by persistent, disagreeable bandaging of the arm or leg, but such is no longer necessary. By the introduction of a 0.5 to 1-per-cent. cocaine solution, with the addition of adrenalin, the median, ulnar and other similar nerves may readily be anesthetized; other nerves are the peroneus profundus, and super-facialis, the crural and the tibial; likewise the peroneus and the saphenous at the knee. For the complete interruption of sensation along these nerves, 20 to 30 minutes must pass before beginning the operation, but once established, anesthesia lasts from two to five hours. This procedure affects only the sensation. The ligature of the limb must be done in addition, to provide for the bloodless operation. The typical Schleich instillation method of local anesthesia is very much increased in duration by the use of a 1 in 100,000 solution of cocaine. In the Schleich method, the important nerves should continue to conduct sensation, but with this adrenalin cocaine mixture they become totally anesthetized, provided the operator delays about 20 minutes. The individual infiltration of the skin becomes then unnecessary in many of these operations, because the whole field is thoroughly anesthetized by waiting. For the sole purpose of hemostasis the author has had no opportunity of making observations with adrenalin, but he is convinced that, arguing from the results he has obtained as aforesaid, an absolute cessation of capillary hemorrhage may be obtained by its use. It seems to him safest of all to use in the subcutaneous tissue by injection some time before the operation has begun, and especially in bleeding in cases of hemophilia.

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April 28, 1903.

*Editor of the* Medical News:

Sir: I beg to say that because of certain misunderstandings as to what is ethically right and proper in the management and distribution of the cards of an intended worthy charity, now being organized by Rev. Dr. Daniel D. Lorenz, of this city (and which errors are not that gentleman's fault), I deem it best to withdraw the use of my name from this scheme for the betterment of certain poor employes of the larger stores of this city. I retain, however, the kindliest of feelings toward that estimable gentleman, Rev. Dr. Lorenz.

Respectfully,

Robert H. M. Dawbarn.

105 West Seventy-fourth Street New York.

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## SOCIETY PROCEEDINGS.

### FOURTEENTH INTERNATIONAL MEDICAL CONGRESS.

*Held in Madrid, Spain, April 23 to 30, 1903.*

[Specially Reported by Cable for the Medical News.]

The Fourteenth International Congress of Spain opened on Wednesday, April 23. The attendance was very large, there being, according to Secretary Caro, over 7,000 members in Madrid. More than half of these were foreigners. In point of numbers, the representatives from the United States stood seventh, some 200 being present. There was much difficulty in getting to the congress by reason of the lack of transportation facilities, and the organization of the different sections was not as complete as might have been wished. The Association rooms set apart for the meetings of the different sections were entirely inadequate for the purpose and, as a consequence, there was much delay and discontent.

First Day.

**President's Address.**—In the afternoon of the first day President Calleja, gave an inaugural address in the

Opera House, the King and Queen of Spain being present. President Calleja chose as the subject of his address a biological topic. He dwelt upon the cell doctrine of epigenesis and the influence that it had on the study of varous theoretical and practical biological phenomena. In the field of medicine he dwelt particularly on the subject of bacteriology, saying that during the past thirty or forty years the researches in this line had practically dominated the entire field of medicine.

Following the President's address, Professor Schroetter, of Vienna, Brouardel, of Paris, and Pavy made congratulatory addresses, in which they referred to the splendid attendance at the Congress. At the end of the first day Professor Silvella closed the general congress with an address, and in the evening a grand ball and reception was held in which most of the members participated.

**Social Functions.**—Wednesday afternoon there was a reception tendered to the members of the Congress in the Royal Gardens and on Friday afternoon there was a gorgeous afternoon reception in the King's palace, in which the King himself received the members of the Congress. Saturday afternoon there was an expedition to the Escurial. On Sunday the members attended a bull-fight and on Monday there was an excursion to Toledo.

### SECOND DAY.—APRIL 24, 1903.

This day was largely given up to organization elections, and the general reports which were to have been read were postponed. Some of the work of the Sections was begun on this day and we here give in abstract a number of the papers read before the different Sections.

#### SECTION ON PATHOLOGY.

**Treatment of the Auto-intoxications Due to Overaction of the Nervous System.**—Prof. Alexander de Poehl, of St. Petersburg, traced a circulus vitiosus in nervous auto-intoxications, in which the chief agent is the adrenal. Deficient tissue oxidation sets free a number of organic acids in the blood. Adrenal, which Poehl has found in many tissues, is dissolved out by the hyperacid blood serum, and as a reducing agent, still further intensifies the acidification of the blood. Senator has recommended spermin for this condition, inasmuch as it best combats the hyperacidemia.

**Cryogenine.**—Professors Lumiere and Chaumier read a paper on this new antipyretic tablet. It is a product of electrolytic acton, beng a semicarbazide and in doses of from one-half to three-quarters of a gram (7 to 10 grains), it acts as a powerful antipyretic lowering temperature from one to three degrees immediately. The maximum effect is reached in about three hours and persists from six to 48 hours according to the particular type of disease under consideration. It causes no disturbance of the body, affecting neither the genito-urinary organs, stomach or intestines, nor the nervous system. Moreover, it is not poisonous to children, nor is there a toleration established.

**Etiology of Malignant Tumors.**—In the pathological section the discussion on the etiology of the malignant tumors was spirited and illuminating. Those in favor of the parasitic theory were equally divided with those who believed in other factors. Among the papers read a number are here given.

**Tumor Formation.**—Professor Doyen of Paris, gave an extensive discussion on a new micrococcus, the *Micrococcus neoformans,* which he thought was an active biological factor in the development of tumors. All tumors he thought were due to some form of parasitic infection, analogous in some manner to the inflammatory growths induced by *Actinomycosis bovis.* The malignant neoplasms of rapid growth he believes are due to the *Micrococcus neoformans,* which microorganism he was able to obtain in pure cultures, and further, by means of inoculations in animals from the bouillon cultures he was able to produce a marked inflammatory reaction with the production of a neoplasm. Toxins were obtained from the cultures. These, on injection into individuals suffering from carcinoma produced a reaction analogous to the tuberculin reaction in consumptives. This reaction test Doyen considered of much importance.

**Sarcoma and Coccidia.**—Ramon y Cajal of Madrid, professor of pathology and the well-known investigator on the anatomy of the nervous system described a type of sarcoma in which he had found a coccidial parasite. This *Coccidium* caused a granuloma of central origin, which was chronic in its course and induced a central necrosis which involved the skin, muscles and many of the organs. The coccidia were large. The stages of evolution were not determined in all their various cycles, but he gave the name *Coccideus giganteus* to the organism.

**Parasitism in Tumors.**—Dr. O. Israel of Berlin read a critique of modern theories of parasitism in tumors. He said that tumors represented simply the reaction of the tissues to an unnatural stimulus, hence it was entirely gratuitous to suppose a uniform etiological factor. The tissues might react in exactly the same fashion, producing sarcoma, or carcinoma, etc., to very different stimuli. But, if ectogenous parasitic agents are the actual causative factors, then the demonstration of them must conform to the requirements formulated by Koch. His first requirement, namely inoculation, has been complied with only apparently, by means of the transplantation of tumor tissue; reproduction of the agens morbi has never been proven. His second requirement, the microscopic detection of the agens morbi in the diseased tissue has also not been satisfied. Israel stated that plant parasites occasionally occurred but as commensals, rather than in the rôle of the causative agents. The animal parasites so often described are artefacts. The third requirement, of pure cultures, has never been satisfied in case of the supposed protozoan agents. Finally, the production of neoplasms by the inoculation of cultures has never succeeded; apparent successes were in reality inflammatory neoplasms. The real explanation of tumors is to be sought in cytobiological conditions—a pathological increase in the proliferative tendencies of the cell.

**Blastomycetic Lesions.**—Dr. A. Buschke presented a very detailed review of our knowledge upon the *Blastomycetes* in disease, paying especial attention to the *Oidiummycosis* of the Americans. The routes of infection are the skin and mucosæ, probably through some lesion; the mode has never been ascertained. There are three types: blastomycetic septicemia, localized infection, and the typical non-inflammatory, slowly growing, blastomycosis. He described the various modification of the latter type in detail, with their pathology. The disease is more fatal in men than in animals, by reason of the greater tendency to internal metastases.

**Artificial Imitation of Pathological Cell Conditions.**—Dr. Unna of Hamburg showed that the various types of cytoplastic and karyoplastic degeneration might be induced on the microscopic slide by means of the action of various solutions.

**Value of Agglutination.**—Professor Paltauf, of Vienna, emphasizes the extreme value of agglutination for the determination of the specificity of any given micro-organism. The serum of horses, immunized by streptococci of scarlatina, as determined by Moser, of Berlin, agglutinated the same coccus in high dilution, but did not show a specific reaction to the micro-organism of erysipelas or phlegmon.

**Bone Implantation.**—Professor Cornil of Paris read a paper, saying that the research of Bartels demonstrated that both dead and living pieces of bone were not equally efficacious in bone implantation and it was premature to infer that the living pieces kept alive. Both implantations were observed and were replaced by fresh bony tissue, but the live pieces were of more value in closing up bony cavities because the granulations were more active and abundant. This Bartels had demonstrated on the cranial bone of the dog and other animals.

**The Protective Rôle of Human Saliva.**—Dr. Miller of Berlin expatiated on the relations of the saliva to dental caries and the other infectious diseases of the mouth. He found that the saliva of men, per se, possessed absolutely no protective or antiseptic properties.

The sulphocyanide of potassium, likewise, has no bactericidal action, nor has the buccal mucosa. The saliva contains no cytoses and is not hemolytic. The secret of the antisepsis of the buccal cavity lies in the buccal flora. By simple overgrowth, they crowd out and eliminate the majority of saprophytes and pathogenic bacteria. In the diseases of the soft parts, phagocytosis plays an important rôle. Caries is very largely predetermined by the character of the teeth.

**The Etiology of Rheumatic Fever.**—F. J. Poynton, M. D. and Alexander Paine, M. D., of London, presented a fresh contribution to the vexed problem of the bacterial origin or rheumatism. A priori, they pointed to the clinical evidence in favor of the specificity of the disease. Granted that it was a special disease, it was clear that it was one of a group of closely allied conditions, and on this account the postulates of Koch should be rigorously satisfied before any bacterium could be claimed as its cause. They had isolated a diplococcus from 22 cases of rheumatic fever, had demonstrated it in the principal lesions, had given it in pure culture, and produced by intravenous inoculation into rabbits identical lesions, from which they had in turn isolated the bacterium. Thus, they had gone further than all previous investigators in this field.

The organism is a minute diplococcus, aerobic or anaerobic, growing in acid milk and bouillon, and on blood agar, and of low but constant virulence. They knew of no specific test for the diplococcus.

**The Influence of the Toxins of Diphtheria and of Tetanus on the Blood.**—Dr. H. Kucharzewski detailed the results of a laborious experimental research into the effect of subcutaneous doses of various sizes of the toxins of diphtheria and tetanus, as revealed by changes in the corpuscles, the hemoglobin, and the specific gravity of the blood. In general, the results were the same for both. Large and medium doses diminish the erythrocytes and the quantity of hemoglobin, and increase the specific gravity. There is a polynuclear hyperleucocytosis which is at its acme in the agony, but gradually declines in the non-fatal cases (small doses). In the fatal cases there is a diminution both of the lymphocytes and eosinophiles, while the latter are increased in non-fatal cases.

The examination of the blood in infective diseases may thus give valuable prognostic indications, depending on the relative increase (favorable), or decrease (unfavorable) of the eosinophiles.

### SECTION ON THERAPEUTICS.

**Effects of Injections of Antidiphtheritic Serum, Antitetanic, and Antistreptococcus Serum, on the Blood.**—Dr. H. Kucharzewski of Warsaw read a paper on the effects of the subcutaneous injection of these various substances, and also of normal serum taken from a horse, into rabbits. He found that these various sera produced exactly the same results when injected in various quantities as did corresponding quantities of normal serum of the horse. Hence, he concluded that the effects were due to the serum, and not to the specific antitoxic content. In detail, small doses are without any effect. Moderate doses produce a slight hyperleucocytosis for two to three days. Massive doses slightly diminish the number of red corpuscles and the hemoglobin, do not affect the specific gravity, and produce a considerable increase of the polynuclear, and diminution of the mononuclear, leucocytes.

**Ferruginous Waters for Chlorosis.**—Dr. E. Guilleaume, of Spa, said that the same circulatory conditions which give the subjective symptoms of chlorosis prevent the proper assimilation of iron as a medicine. The ferruginous baths (carbonic acid gas) rapidly improve the general condition by improving the circulation, and so, without directly affecting the hemoglobin, further a cure by rendering possible the assimilation of the iron given internally.

**The Waters of Dax.**—Dr. A. Laranza of Dax lauded the effects of the waters in certain abarticular forms of chronic fibrous rheumatism, namely, retraction of the palmar fascia, and plastic induration of the cavernous body. The local application of the waters and vapors induce resolution of the fibrous infiltrations.

**Argon and Helium in Mineral Waters.**—Dr. A. Popskin of Spa, said that the recently discovered elements, argon and helium have been identified in various waters, Cauterets, Harrowgate, Voslau, etc.. He went into great detail on the method of discovering these elements. He said further, that argon and helium do not appear to enter into the biochemical process. The air of inspiration and of expiration shows no difference in their amounts, and they cannot be recovered from animal or vegetable bodies by analysis. They, therefore, probably exercise no therapeutic action in the waters.

**Syphilis and Hydrotherapy.**—Dr. H. Keller of Reinfelden, said that physiotherapy, comprising hygiene, hydromineral treatment and hydrotherapy, are as important as medicine in the treatment of syphilis. Their combination is the ideal. In syphilitics who are of the lymphatic or arthritic constitution, or anemic or debilitated, it is of signal service and, in the severe cases, it is really specific. It is indicated in cases of idiosyncrasy against mercury. Sulphurous, chlorinated, and iodide springs are of especial value.

**Tuberculosis and Hydrotherapy.**—Dr. M. Cayeux of France said that certain waters, by their stimulating action serve to fortify the organism against the attacks of the bacteria, while, by their peculiar composition, they combated the catarrhs, congestion, and other "paratuberculous" manifestations of the disease. He detailed the special indications for various types of waters.

**Argon and Helium.**—Dr. R. Durand-Fardel of Paris read a paper of similar content and conclusions to that previously reported.

**The Clinical Types of Pulmonary Tuberculosis and their Therapeutic Indications.**—Dr. Régurier of Nice asserted that a rational and scientific mode of treatment of the disease necessarily presupposed an accurate clinical subdivision of its various types. There was only one logical basis for such a subdivision, namely, the degree of resistance which the organic economy opposed to the microbic infection. This alone, he said, determined the types and variations in the disease, and, at the same time, furnished the therapeutic indications. The reaction of the organism was of three possible grades, namely: (*a*) of unbending resistance; (*b*) of less firm resistance; (*c*) of entirely inadequate resistance. Upon this basis he proposed a very complete regrouping of the various clinical types hitherto generally recognized.

**The American Italy.**—Dr. Chas. E. Nammack, of New York, read a paper in which he lauded Southern California under the above title. He asserted that it had fully as varied a climatology as Italy, and, like the latter, presents extremes of meteorological conditions. He described six distinct classes of climates which he said were to be found in that region, each one having a distinct value and application, as follows:

1. A purely insular climate at Catalina, Coronado, and other channel islands.
2. A peninsular climate, at Coronada Beach outside San Diego Bay.
3. The coast climate. ,
4. The foothill and valley climate, 200 to 2,500 feet elevation.
5. The mountain climate, 2,500 to 9,000 feet elevation.
6. The desert climate, from 360 feet below sea level to 2,500 feet elevation.

**The Dynamogenic or Inhibitory Action of Light Massage.**—Dr. Saquet of Nantes read a paper based on comparative dynamometrical measurements of the power of the hands taken both before and after massage had been administered to the individual. Generally, there is an increase in power. In some cases, however, there is, apparently, a diminution in the register of the dynamometer; even, in such cases, however, the equilibrium is generally restored within the period of ¼ hour.

**Physicotherapy, Its Indications and Its Advantages.** —Prof. A. J. Rivière of Paris read a most enthusiastic paper in praise of the physicotherapeutic agents, under which title he included electricity, heat and light. After a rather theoretical, or even mystical, discussion of their relation toward the vital processes, he came to their actual indications. They act chiefly by stimulating the emunctory organs, by altering metabolism, and by influencing the distribution of the blood to the various parts of the body. The diseases of city life ("nosopathies urbaines") are consequently its field, par excellence: gout, arthritism, dyspepsia, nervosity, all types of dystrophy, "uterine patients," in short the great group of chronic cases which have hitherto proved refractory to medical treatment, are the chief indications for physcico-therapy.

**Importance of Revulsive Medication in Therapeutics.**—Dr. J. B. Obregon of Spain read a very suggestive paper on this topic, in which he emphasized the long history and the logical importance of the counter-irritant method of treatment. He said that its action was most manifest in certain cases of acute edema laryngis, and bronchiolitis, in which prompt vesication immediately turned the tide of the disease. But it was indicated in all forms of internal inflammation in which it could be applied.

**Pneumatic Bulbs for Aseptic Hypodermic Injection.**—Dr. Pierre Laurent of Bois-Colombes suggested that the sealed bulbs containing medicaments for hypodermic injection, be modified by occupying the excess of space with gas under pressure, in order to facilitate the flow of the fluids.

**Physiology and Therapeutics of Hypnotics and Narcotics** —Dr. Vicente Peset y Cervera of Valencia read a paper of this title. He said that these agents were to be divided into such as exercise a direct effect upon the brain, and such as produce sleep indirectly. Cerebral fatigue has been shown, both by histological and chemical methods, to depend on an actual alteration of the nervous substance. These changes probably interest chiefly the nucleinic acids, and are probably induced by insufficient oxidations or the action of certain leucomaines. At all events, the *direct* hypnotics seem to act in the same fashion, though more harshly. The indirect hypnotics, and hypnotism, act upon the brain secondarily through the nerves, respiratory and cardiac functions. The theory of the retraction of the processes of the nerve cells does not satisfactorily explain sleep. The state of the intracranial circulation expresses the successive phases, or grades, of the action of the pharmacological hypnotics: first, active congestion (excitation); secondly, relative ischemia (hypnosis); thirdly, passive congestion (narcosis). Since there is no sleep center, the action must be a general chemical one upon the brain.

## SECTION ON OBSTETRICS.

**Treatment of Placenta Previa.**—Dr. A. R. Simpson of Edinburgh said that most cases of placenta previa demanded immediate bipolar version, and slow extraction. If diagnosed late in pregnancy, and the hemorrhage has not been severe, an expectant method is indicated. In primiparæ, especially, resort should be had to preliminary tamponade of the vagina or hydrostatic dilatation. In marginal implantations, one may separate the placental lobules from the inferior uterine segment with the finger, which permits the os to dilate without fresh hemorrhage. The third stage demands the greatest care, with, at times, tamponade of the uterus.

**The Effects of Treatment at Franzensbad.**—Dr. L. Steincber of Franzensbad read a paper on the baths, in which he said that those which ranged within the indifferent zone, i. c. 26 to 30.5 R, were especially suited, by virtue of the marked physiological reaction which they induce to feminine ailments, constitutional diseases and certain forms of heart and vascular disease. The baths of higher temperature have the same value as other hyperthermic source.

**Hysteroscopy.**—Dr. S. Clado of Paris described certain important modifications of his hysteroscope. He said that in uterine hemorrhage, the hysteroscope enabled the surgeon to determine the site and nature of the lesion. It may be employed in case of foreign bodies, and is of prime assistance in determining cases of placental retention and of unrecognized induced abortion.

**Hysterectomy for Uterine Sepsis.**—Dr. T. Costiguera of Santander said that cases in which the uterus did not yield to intra-uterine treatment should be hysterectomized. The most favorable cases were those in which the infection was limited to the uterus, the adnexa, and pelvic peritoneum, but neither general peritonitis nor general sepsis were a contraindication. Collapse and descending infection furnished rational contraindications.

**Early Diagnosis of Extra-Uterine Pregnancy.**—Dr. G. Caldevini of Bologna detailed the symptoms of this condition as at present understood: Metrorrhagia following a period of amenorrhea; amenorrhea; a round elastic tumor, antero-lateral to uterus; the concomitant symptoms of pregnancy; an enlarged uterus of pregnancy, but empty; local pains; menstrual decidual cells; a uterine membrane. Cases of slight internal hemorrhage similate intestinal colic.

**Face Presentations and their Prognosis.**—Dr. W. Nagel of Berlin combated the general belief that face-presentations with chin posterior were of bad prognosis. He said that this position occurred as a very natural and frequent evolution of primary occipital presentations, and almost invariably righted itself by rotation of the chin anteriorly. Narrow pelves may prevent the entrance of the face, as of the head in other forms of presentation, and always indicate early version. Truncate dolichocephaly, as contrasted with the acquired forms, is an important factor in face presentations.

Dr. W. Nagel of Berlin further described his method of restoring the perineum.

**Operation for Retroflexio Uteri Mobilis.**—Dr. A. Schucking of Pyrmont fixes the portio vaginalis, and the fornix posterior vaginæ by means of two circular ligatures of silver thread, which remain in place 4-6 weeks. In 18 cases, the results were almost always satisfactory. In one case, he replaced Schulze's pessary by an injection of paraffine into the anterior fornix.

**Electrothermic Hemostasis in Surgery.**—Dr. A. J. Downes of Philadelphia said that there were many objections to the use of sutures. He said that with a measurable source of electricity and proper apparatus, electrothermic hemostasis was in many respects a more perfect method. One could employ hemostasis en masse, and in detail of each vessel. Appendicectomy, salpingo-oophorectomy, etc., might be performed by this method. The scars were less irritable, and there was less tendency to form adhesions.

**Treatment and Prophylaxis of Neoplasms.**—Dr. A. J. Rivière of Paris said that hydroelectric baths combined with friction, carbonic acid baths, faradic currents, and vibrating massage were of great assistance in the treatment of fibromata, by suppressing the pain and the metrorrhagia, and relieving the local congestion. In many cases, it replaces operation. Physicotherapy prevents malignant degeneration of benign tumors.

**Metritis.**—Dr. P. L. González of Madrid said that the most frequent form of metritis was that involving the glandular apparatus, with either atrophy or hypertrophy; disease of both glandular and interstitial tissue is frequent, but disease limited to the interstitial tissue alone is rare. Non-infectious metritides tend to involve single histological elements, while the infectious forms involve all the tissues. Glandular disease occurs in the metritides post-abortum, and there is atrophy at the change of life. Hemorrhage is the predominant symptom of metritis in multiparæ, leucorrhea in nulliparæ. The hemorrhage seems to depend on glandular disease. He reported 3 cases of metritis post-abortum with papilliferous growths, and very severe hemorrhages.

### SECTION ON NEUROLOGY AND PSYCHIATRY.

**Folies Toxiques.**—Dr. J. Galiana of Madrid read a paper on those cases of chronic alcoholism in which mental degeneration entered as a complicating factor. In such cases the manifestations of chronic and of acute alcoholism are noticeably different from the pure types. In some of these cases acute attacks may resemble the suspension of mental functions of epileptics. The disturbances of chronic alcoholism are accentuated. The terminal dementia occurs earliest. Instead of the motor system, it is the psychical system, as the point of least resistance, which first breaks down. Alcoholism tends to accentuate and develop all previously existent psychical anomalies. In epileptics it multiplies the number of attacks, but is never a cause of the disease per se. In hereditary neurotic or degenerate individuals, alcohol tends much more rapidly to induce delirium; a single debauch may thus precipitate a typical delirium in such cases. The speaker then proceeded to a discussion of the syphilitic psychopathies. Secondary syphilis produces psychical aberrations in degenerates, inducing these effects both through the mental anxiety, the anemia, and possibly cellular intoxications. True syphilitic psychoses are perturbations of the order of delirium, of dementia and of the motor functions. The last are of great diagnostic import, and may be either paralytic, convulsive, tremulous, or ataxic. He then detailed the various clinical forms of syphilitic motor disturbances, especially pseudo-general-paralysis. It is a factor in most cases of true general paresis which occurs in spite of an early and thorough antisyphilitic treatment, and also persists in spite of it.

**Evolution of Ideas of Delirium in Anxious Melancholia.**—Dr. M. Lemos of Porto discussed with great finesse a development of these ideas from a pathological, psychological standpoint.

**Voluntary Motion.**—Dr. H. Frenkel of Switzerland, famous for his work in locomotor ataxia, urged certain novel ideas on the subject of voluntary motion. He said that motion never existed as the function of the will alone, but was always determined by sensory stimuli. Serious disturbances of sensibility and anesthesia consequently resulted in pronounced disturbance (ataxia), or abolition of motion.

He then passed on to a discussion of the value of re-education in tabes, which, he said, completely overthrew the doctrine of the progressive nature of the disease. He was successful, he said, in re-educating even the severest cases of ataxia. He deprecated the use of the apparatuses of Leyden and Jacob.

**Pseudosclerosis.**—Dr. L. Von Frankl-Hochwart of Vienna read a paper on this type of disease first described by Westphal, in which he said that it could be diagnosed, though with difficulty, during life. From multiple sclerosis it differs in the absence of nystagmus, of the lesions of the optic nerve, and the sensory disturbances, of the facial and palatal paralysis, and finally of the sphincteric paralyses, and in the frequent presence of mental disturbances; the scanning speech and the tremor also differ in certain details. The disease presents no anatomical lesions, but is not hysterical, from which it is distinguished chiefly by its occasionally rapidly fatal course, the decubitus, and other symptoms. He then passed on to a consideration of diffuse general sclerosis.

**Psychiatry as a Clinical Science.**—Dr. P. Pregowski of Heidelberg said that the chief element of progress in modern psychiatry had been the recognition of mental states (depression, mania, etc.), as symptoms, or periods, of various types of disease, and not as diseases *sui generis*. He said that the study of the associated bio-chemical changes in such cases, and of pathological psychology were of the greatest importance for future progress.

**Neurasthenia and Disturbances of Speech.**—Dr. H. Gutzmann of Berlin said that neurasthenia was frequently associated with disturbances of memory and of the faculty of the association of ideas (Akataphasia, Akatagraphia, amnesia); secondly, by spasmodic or ataxic disturbances of the motor function of speech (stuttering, etc.). All these disturbances are increased by emotional excitement. The first class of disturbances were subject to cure by the ordinary treatment of neurasthenia; the second demanded special exercises.

**Treatment of Esophagismus.**—Dr. S. Dubois of Sanjou said that the proper treatment of esophagismus should always be directed to the cause, if ascertainable if not, suggestion, and the use of physico-therapeutic agents (dilatation, electricity) sufficed to effect a permanent cure.

**Treatment of Epileptics.**—Dr. F. Beach of Kingston Hill said that epileptics might be divided, with reference to treatment, into those with mental disturbances, and those without. He reviewed the methods hitherto employed, and also suggestion, for the treatment of the former class. The epileptic asyla of Maghull and of Meath, and the colony at Chalfont, he said, gave evidence of the great progress which had been made in the treatment of the condition.

## SECTION ON DISEASES OF CHILDREN.

**Treatment of Tuberculosis in Children by Meat Juice and Raw Meat.**—Dr. A. Josias and Dr. T. C. Roux of Paris presented the results of their treatment of children with 150 gms. of muscle juice and 100 gms. of raw meat each day, in 46 cases of tuberculosis of all types, of which 30 had pulmonary affections. They conclude that the treatment ameliorates the general condition noticeably, increases the weight, and arrests the progress of the local disease. Moreover, the cure is permanent. In cases of very profound disturbance and advanced cavity-formation, the treatment is frequently without avail.

**The Bacterial Agent of Chorea, Endocarditis and Rheumatism.**—Dr. F. J. Poynton emphasized the clinical evidence in favor of the rheumatic origin of chorea. He said that after injecting a rabbit with the diplococcus of rheumatic fever, the animal had developed a chorea, and the micro-organism was demonstrated in the pia mater and the endothelium of the cortical capillaries. This had been repeated by Fritz Meyer. Paine had also found micrococci in the mitral valve, the cortex and the pia, in a case of human chorea. The urine in one case of chorea presented the same diplococcus, which produced chorea, endocarditis, and rheumatism in a rabbit. But, he said, chorea might also be caused by other bacteria, as those of erysipelas, or the pyogenic forms.

**Spinal Cocainization in Children.**—Dr. P. B. Diaz of Laragossa presented reports of a series of 15 operations on children varying from 4 to 16 years of age with spinal cocainization. The results were very satisfactory.

**Treatment of Ophthalmia Neonatorum.**—Dr. J. V. Portello of Valencia read a long paper reciting all the details of his treatment in cases of ophthalmia neonatorum; the chief point of importance was his condemnation of nitrate of silver, of corrosive sublimate, and of iodoform, which are too caustic and only promote the progress of the infection; on the other hand he lauded protargol. He described a new irrigator, made by Luer, of Paris.

**Coryza in Nurslings as a Symptom of Syphilis.**—Dr. L. Carralero of Madrid said that persistent coryza is one of the most constant, in the majority of cases, the earliest, and, at times, the *only* symptom of precocious hereditary syphilis. In the latter case, the differential diagnosis may be difficult, but all cases of rebellious coryza in infants should be laid to the door of a diathesis or of syphilis. In itself it is a very dangerous condition, inasmuch as it prevents proper suckling, and leads to broncho-pneumonias, otitides, etc. The treatment is, of course, a general anti-syphilitic one, combined with local measures.

**Periods of Growth.**—Dr. J. Atlassoff of Kiew said that growth was particularly rapid at certain periods of life, which periods varied from one to three in number in various individuals. These periods are marked by predisposition to disease. During such times the organism should be subjected to no unnecessary strain, especially not to that of overstudy.

**The Muscular Dystrophies.**—Dr. Criado of Madrid advanced the theory that the disease was of bulbar origin, supporting his contention by the general clinical aspect of the cases, but by no pathological proof.

**Serotherapy in Diphtheria.**—The noted French President, Dr. Jules Comby, read a very full paper on serotherapy in diphtheria. He stated that its effects, both locally and generally, were of enormous benefit. The subsequent anemia, languor and feebleness were due not to the serum, but to the diphtheria. It might, however, produce menorrhagia or metrorrhagia, also urobilinuria, albuminuria and other urinary disturbances, which were, however, only ephemeral. In every case of even suspected diphtheria the injection should invariably be made, even if the case were of mild type. In cases of laryngeal diphtheria, of malignant types, or late cases, the dose should be doubled, and may be repeated in 24 hours. The injection is indicated in all localizations of the infection, and for postdiphtheritic affections (paralysis). Malign cases present no contra-indication. In benign cases, if complicated by a pulmonary tuberculosis or by an old nephritis, only feeble doses should be employed. The serum decreases the mortality by three-quarters, and, if employed within the first 48 hours, abolishes it. The most serious and confusing complication is furnished by the eruptions, which may be primary (first day) early (within one week) or late (two weeks or more); they are accompanied by fever, and uremic measles, scarlet and other exanthens.

**Treatment of Clubfoot.**—Dr. O. Vulpino of Heidelberg, said that all cases of hereditary clubfoot should at first be treated by gradual redressement, which might, if necessary be replaced by operation. Paralytic cases are to be treated by redressement, by transplantation of tendons, if there are any sound muscles, or, if not, by arthrodesis. Orthopedic apparatus are only a last resort.

**Human Milk for Infants.**—Dr. Monti of Vienna urged that in view of the fact that human milk was the only proper food for infants, it should be made accessible to all classes of the population. He proposed the foundation of institutions of wet nurses, for the use of such of the poor as have need for it.

**Is Tuberculosis Transmissible by Cow's Milk?**—Dr. H. Rehn of Wiesbaden stated that in a case under observation, bovine tuberculosis had not been transmitted through the milk to a human infant.

## SECTION ON SURGERY.

**Radical Cure of Femoral Hernia.**—Dr. O. v. Lassen of Denmark said that the methods of Salher or of Schwartz, by which a muscular flap of the pectineus was dissected off and attached to the crural canal, were inefficient, inasmuch as the muscle tends to atrophy. He prefers to sew the fascia of the pectineus to Poupart's ligament as far as the falciform process, introducing his needle armed with not too fine gut a little deeply into the muscle itself, and taking 5-6 stitches. The method is almost always applicable. In 45 cases he has seen only 3 recurrences, of these cases 31 had a record of 2-6 years. The recurrences were excusable, and due to exceptional circumstances.

**Operative Treatment of Cutaneous Tuberculosis.**—Dr. H. Morestin of Paris said that extirpation was the only method of treatment. In a second communication he described a plastic for prominent tears, comprising the excision of posterior bands, and of pieces of cartilage. In a third communication he condemned the operation of interilio-abdominal disarticulation. In a fourth, he reviewed the methods of cheiloplasty. In a fifth, he described an "esthetic" operation, suitable for cases of slight inguinal hernia, in which the incision is made in the hairy region over the pubes, horizontally or vertically. It is especially suited to congenital cases, and does not permit of complicated sutures.

**Multiple Intra-abdominal Cysts.**—Dr. A. N. Psaltoff of Smyrna reported a case in which he had, at a single operation, done splenectomy, partial hepatectomy, and removal of a large cyst of the mesentery.

**Filling of Bone Cavities.**—Dr. M. Silbermark of Vienna described Prof. Mosetig-Moorhof's method, which consists in removing all diseased bone and working well into healthy areas, drying the cavity with hot air, and then filling with a preparation of lead. He exhibited the metal and the instruments. He showed, by Roentgen photographs, that the lead is gradually absorbed and replaced by fresh bone.

**Operation on the Palate.**—Dr. T. W. Brophy of Chicago gave a stereoscopic exhibition of his method of closing cleft palate. He said that the operation should be done in the first 3 months. The palate bones are forcibly held together by sutures of silver wire.

**Surgery of the Stomach.**—Dr. H. Hartmann of Paris said that for neoplasms ablation was the only operation; in other words, in all suspected cases in which medical treatment had been inefficacious, laparotomy was indicated. For cancer of the pylorus, free excision should be done, together with the ganglionic chain accompanying the branch of the coronary. Of the palliative operations, partial pylorectomy is preferable to gastro-enterostomy. Cancers of the body should also be extirpated. For benign stenosis, operation affords immediate relief, and has no greater mortality than herniotomy. Hour-glass contracture and painful adhesions give good results. For the acute hemorrhages of ulcer he recommends operation only in those cases complicated by pyloric stenosis, with gastric unrest; here gastro-enterectomy is the best sedative and hemostatic. Ulcers, which remain painful in spite of treatment, gastrosuccorhea, and rebellious hyperchlorrhydria, if accompanied by the pyloric syndrome, probably indicate an ulcer at the outlet, and demand operation.

**Epiploitis After Resection of the Omentum.**—Dr. J. Ortiz de la Torre of Madrid pointed out that the numerous sutures which had to be sunk in the abdomen, in cases of hernia in which the omentum was resected, multiplied the chances of infection. It manifests itself 8-10 days after operation by fever, pain and tenderness. It tends, rather slowly, to the formation of abscesses, which point either to the exterior or to the intestine, and tend to be well walled off from the peritoneum by adhesions. Treatment should be expectant and narcotic until the abscess points. The speaker urged hemostasis in epiplorectomy by some other method than suture.

**Surgery of the Stomach.**—Prof. A. Cecherelli of Parma detailed the various maladies of the stomach, and posed as a champion of surgical intervention. He asserted that in very many cases operation accomplished its object, not by attacking the primary malady, but simply by permitting the stomach to empty itself more freely. The organ thus gains the repose necessary to recovery. He held that even the functional disorders, if severe, indicated operation.

**Heat for Tuberculosis.**—Dr. S. Clado of Paris said that heat to local and accessible foci was a valuable mode of treatment.

The actual cautery by hot wire puncture had been proven to be one of the best modes of treating lupus previous to the rise of the Finsen light therapy. In some instances the actual cautery can be applied to a tuberculous focus.

## SECTION ON MEDICINE.

**Symptoms of Muco-membranous Enterocolitis.**—Dr. Froussard of Plombières-les-Bains said that the constipation and the pain were due to the spasm. The spasm revealed itself in the character of the stools, "crayon-like," etc., and also in the results of abdominal palpation. The hypersecretion seems to be of a purely nervous nature.

**A Rational Cure of Tuberculosis.**—Dr. Marcel Monier of Liège said that mistakes in phthisiotherapy were traceable to the notion that the bacillus could be directly attached. The only true method is to build by the organism, by zomotherapy, fresh air, and full feeding.

**Malaria.**—One of the most actively discussed subjects in the section on medicine was the general subject of malaria. It was largely attended. Some of the papers are here presented—others will be given next week.

**Malarial Fever.**—Drs. Barrera and Pittaluge of Spain spoke on the subject of paludism in that country. They said that Grassi, of Italy, and not Ronald Ross of England, was the real discoverer of the transmission of the quartian, tertian, and estivo-autumnal types of this disease were due to different species of parasites. The recrudescence of malaria in times when the parasites are not capable of being transmitted by the mosquito is due to the parthenogenesis of the gametes. These having a continuous cycle of development which bridges over successive epidemics. These gametes seek the internal organs during the disease. Thus, as an example, it is known that the crescents can multiply by nuclear differentiation, as this may take place in June and may reinfect young mosquitoes. The quotidian type of the disease he believes may be due to the estivo-autumnal parasite, or it may be a rapid development of the tertian parasite. Further, there may be an independent species of parasite causing this type of disease.

**Hydrographic Conditions.**—They further said that in the acute and chronic estivo-autumnal forms the most diverse hydrographic and topographic conditions pleased the plasmodium, and that in view of this fact the plasmodium could live under so many diverse conditions that extermination of the mosquitoes that might be infected would prove a large undertaking.

**Prophylaxis.**—The prophylaxis directed toward the extinction of the mosquito in view of this peculiar hydrographic versatility of the plasmodium rendered the hygienic means of prophylaxis on the question of the extinction of the mosquito most expensive and practically inefficacious. The most efficient means of exterminating the disease he believed was to mechanically protect the patient who was affected by it. Thus every patient with malaria should be thoroughly screened off by mosquito netting in order to prevent the mosquitoes infecting themselves. Inasmuch as the individual cases suffering from malaria can be better looked after and taken care of than can the mosquitoes of the woods and streams, this method he believes will prove most satisfactory. As far as drug treatment is concerned, quinine is, of course, the best, and these authors state that during the latent period of winter, quinine can be given to advantage.

**Recrudescence of Malaria.**—Dr. Ascoli of Rome emphasized the importance of malarial recrudescence in Italy. He said that malaria in epidemic form appeared in June, notwithstanding the fact that at this time there could be but relatively few infected mosquitoes. Most of these patients show, however, an antecedent malarial history. He described two types of recrudescence, one with a brief interval, with a longer cycle, the former he thought was due to imperfect extinction of the parasite by antimalarial remedies, the latter due to parthenogenesis of the organism itself. This latter type communicates successive epidemics. He considered that the proper mode of prophylaxis was to look after the infected individual. Mosquitoes are always being born to be infected, and thus to transmit, whereas man is the more permanent host.

### GENERAL PAPERS.

**Hot Air in Rhinitides.**—Dr. M. Lermoyez and G. Mahn of Paris said that their method of treatment of vasomotor rhinitides, ranging from the congestive types with obstruction to the cases of hypertrophy and hydrorrhea, enabled them to count their cases of cure by the hundred. A necessary preliminary is the removal of all mechanical obstructions, after which the treatment acts as a specific. The instrument is made by Collin, in Paris.

**Symptoms of Antral Disease.**—Dr. G. Mahn of Paris said that it was necessary to distinguish cases in which the antrum simply acted as the reservoir of pus formed elsewhere, and cases of true chronic maxillary sinusitis. In the latter condition, the wall becomes very much thickened and diminishes the capacity of the cavity, a fact which enables us to diagnose the case. The fluid contents of the cavity below a plane through the level of the ostium, is measured by an aspirator, and if found not to exceed 1½ c.c., may be held almost invariably to indicate true sinusitis. He then exhibited a series of new instruments.

**Etiology of Ozena.**—Dr. W. Freudenthal of New York said that ozena is an atrophy of all the inner coats of the nose, due chiefly to excessive dryness of the air, complicated by the secondary invasion of a bacillus. The micro-organism cannot enter unless the soil has been previously prepared in this fashion. Sinusitises are frequently secondary to the ozena.

**Is Atrophic Coryza Autonomous?**—Dr. E. J. Moure of Bordeaux discussed in great detail the various forms of atrophy, rhinitis, and ozena, and their combinations. As regards treatment, he said that it was sufficient, in case of the purulent ozena of adults, to suppress the inflamed adenoid tissue, and to employ nasal lavage. Massage, with pulverizations of silver nitrate, is an excellent mode of treatment. Hypertrophied mucosæ tend gradually to disappear, even if cocaine and adrenalin do not affect them, and excision is very dangerous. In pseudo-atrophic strumous ozena, lavage and general constitutional treatment suffice to cure the rhinitis. Complicating sinusituses demand surgical intervention. Finally, in true atrophic ozena, in young children, one should employ simply regular lavage, until the patient has attained an age suitable to operative procedure. At this point the nasal cavity is reconstituted by means of interstitial injections of paraffine, which fill out the cavity and prevent the accumulation of foul-smelling and decomposing secretions.

**Obligatory Report of Tuberculosis.**—Dr. H. Tabor of Prague recited six very strong arguments for the general prophylaxis of tuberculosis, based on reports of every case of tuberculosis, of death from the disease, or of change of lodging of diseased persons.

**The Intellectual Life.**—Dr. L. Bares of Saint-Gaudens said that intellectual labor predisposed to digestive disturbances, to disturbances of nutrition, and to nervous breakdown. He recommended a severe alimentary hygiene, with prescription of rich indigestible foods. Alcohol and tobacco are interdicted. The brain-worker must exercise in the open, keep his bowels open and his skin active, and must be a milk-drinker. Sleep is the criterion of the nervous condition, and should be undisturbed.

**Paludism and Its Transmission.**—Dr. F. Hauser of Madrid said that *Anopheles* did not furnish the only intermediate host for the malarial parasite. The germ might live in humid earth under favorable conditions, and the disease might flourish in regions free from mosquitoes. The hematozoon may exist in some unknown form in the earth, whence it is conveyed by the air or by mosquitoes to the blood. The inhalation from dried marshes, or the drinking of water infected by the bodies of dead mosquitoes could infect. Mosquitoes dying in marshes set free the organism which infects man through the medium of the air.

**Permeable Urachus.**—Dr. B. Guisy of Athens reported two cases, one of a man of 38, another in a prostatic of 60, both cases having been attacked by ischuria. He also reported a case of extraction of a fetus of about three months from the bladder of a woman who had had an ectopic abortion.

**Radical Cure for Hypertrophy of the Prostate.**—Dr. A. Pousson of Bordeaux reported his experience with the various methods for the treatment of prostate. Orchidectomy, single or double, has its dangers for old men, and produces very inconstant results. Vasectomy and angioneurectomy do not reduce the prostate, but tend to prevent the congestive attacks of that gland, which so often induce acute ischuria. Suprapubic prostatectomy rarely improves spontaneous micturition, but facilitates lavage of the blood, and so diminishes the chances of ascending infection. It is better borne by very old men than is the perineal operation. The latter procedure, however, with total extirpation of the gland, is the single rational and radical cure.

**Surgical Intervention in Nephritis.**—Dr. A. Pousson of Bordeaux said that his results agreed with those of Harrison and of Edebohls and led him to believe that operation could at least ameliorate, or for a time arrest, the course of a chronic Bright's. He advises decortication only for the more or less latent periods (périods de tolérance) of the disease, while cases of frank uremia, with oliguria, diminution of urea, etc., demand nephrotomy. The good effects are attributable to relaxation of intrarenal tension, to improved circulation, and absorption of infiltrations. In all his cases, he has seen improvement in the urine, and disappearance of the hydremic and uremic symptoms.

**Functional Renal Diagnosis.**—Dr. A. Hogge of Liège said that all the new methods of diagnosis were of value, but failed to give an exact measure of the kidney functions. They allowed of a *comparison*, in other words, of the two organs, and so served as a check on surgical intervention.

**Prostatectomy.**—Dr. S. Clado of Paris said that the suprapubic route was indicated solely for cases in which the middle lobe formed a tongue in the bladder. The perineal route is the operation of choice; complete extirpation is advisable, but not absolutely necessary. Incision of the urethra must be avoided. If there is an independent, pedunculated projection into the bladder, the perineal operation is to be supplemented by a suprapubic incision. In prostatovesical tuberculosis alone is incision of the urethra advisable.

**Electrolysis for Stricture.**—Dr. J. A. Fort of Paris said that linear internal electrolysis is easy and almost painless. There is little loss of blood, and little danger of urinary fever. No permanent sound is necessary. There is immediate relief and no shock. In 40 cases the mortality was nil.

**Malignant Tumors of Kidney.**—Dr. R. Mollá of Valencia read a paper in which he expressed the generally accepted views on operation for kidney tumors.

**Changes in the Vessels and Lymphatics in Syphilis.**—Dr. A. Ravogli of Cincinnati asserted that syphilis is the disease of the lymphatic system, *par ex-*

*cellence.* Microscopically, there is an increase of the epithelial cells lining the lymphatic vessels, with infiltration and desquamation. Many of the lymphatics are obstructed by thrombi and coagula, while the walls are inflamed and infiltrated with polynuclear leucocytes. The arteries present the same lesion, with an especial predisposition on the part of the endothelia. The veins are thickened and brittle. In addition to this phlebitis and arteritis, there may be gummatous infiltration of the walls of the vessels.

**Radiotherapy.**—Dr. Chas. Warrenne Allen of New York asserted that many diseases of the skin, including cancers of different types, were ameliorated or cured by the X-rays. Protective media should be employed and, although there should always be a slight degree of dermal irritation, profound burns are unpardonable errors. In malign growths, the resultant scars are better than those after curettage or caustics.

**Leprosy in Spain.**—Dr. J. G. Castellano of Javea said that leprosy was frequent in Spain and was endemic in certain provinces. He urged that asylums should be widely distributed for the detention and isolation of all cases, in order that the disease might be exterminated.

**Parasyphilitic Diseases.**—Dr. J. N. Hyde of Chicago said that as there were certain symptoms which occurred in other diseases but never in syphilis and, as there were other conditions, *e.g.*, the gumma, which occurred in syphilis and in syphilis alone, so, finally, there is an ambiguous set of conditions which occur both in syphilis and in other conditions. This third group he calls the parasyphilides, and includes in it general paralysis, tabes, leucoplasia, buccalis, stricture of the rectum, etc.; the etiological diagnosis is here of absolute importance for the cure. Dr. G. Ogilvie of London combated the theory of parasyphilitides as originated by Fournier, and attacked both the diagnostic and therapeutic system advanced by the French author. He said that parasyphilis was not a discovery, but an invention.

**Purpura.**—Dr. A. Jamieson of Edinburgh said that purpura, comprising cases of hemorrhage into the skin, mucosæ, and internal viscera, is only a symptom of very diverse conditions. Of these, he mentioned, the circulatory disturbances of heart disease; the rheumatic forms, including Henoch's type, and, finally, the purpuras due to drugs, especially iodide of potassium. It may replace the exanthemata. It complicates certain diatheses—scurvy and hemophilia. Rupture of a vessel, rather than diapedesis, is the most frequent lesion, and is due to fatty degeneration of its walls and variations of caliber.

**Human Blastomycoses.**—Dr. Hyde of Chicago said that blastomycosis might be due to cutaneous, or to pulmonary infection, in which latter case the skin was secondarily involved through the medium of the circulatory channels. Blastomycosis might result fatally through toxemia induced by the simultaneous invasion of a large number of viscera. The so-called protozoal infections can no longer be differentiated from blastomycosis. It is no longer possible to speak of dermal blastomycosis; the disease is to be regarded as general, with localization especially in the skin.

**Hysterectomy in Acute Affections.**—Dr. Pinard of Paris read a paper on this subject. He said that there was no rational indication for removing the uterus in acute affections, excepting in those cases where putrefaction resulted from trauma. This accident was likely to occur in fibromata, and in this condition alone is it indicated. In cases of acute infection the autopsy of the patient rarely shows localized lesions, and the presence of bacteria in the blood does not affect the prognosis in the least. Bacteriological investigation of the uterus he considers of very minor clinical value, as it is impossible to localize the infection to the uterus and the determination of the advisability of an operation is difficult.

**General Infections.**—Dr. Cortajeva of Madrid said that general infections diminished the importance of the uterus as primary agents. Chronic infections never justify a hysterectomy, and as for the proper moment for operation it is almost impossible to determine! Early hysterectomy he believed had many disadvantages and required secondary conservative surgery of the adnexa.

**Mortality of Radical Operations.**—Dr. Treub of Amsterdam maintained that radical operations had a very high mortality. A cure cannot be guaranteed in any case, and the highest justifiable estimate of the percentage of cures is not over six per cent. Moreover, the secondary consequences are prolonged and disagreeable. In the conservative operation the mortality is very low, not over two per cent. succumbing, but following a conservative operation secondary operations may be necessary. He believed that salpingo-oöphoritis could be treated medically, and it was never wise to induce profound constitutional disturbances by radical operations. Posterior colpotomy he believed to be a conservative and safe operation in rebellious or sterile cases, but it was not to be advised in inefficacious cases and particularly to be avoided in tuberculosis.

(To be Continued.)

## THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, April 13, 1903.*

The Vice-President, Ransford E. Van Gieson, M.D., in the Chair.

**Non-Medicinal Treatment of Constipation.**—The paper of the evening was by Dr. Samuel G. Gant, on this subject. The failure to obtain good results in habitual constipation he thought was often due to the injudicious prescribing of purgatives and enemata when the costiveness was caused by conditions of the lower bowel requiring operation or local treatment. Many other cases are the result of improper modes of living, with a lack of intestinal tonicity and glandular secretion, and must be treated by correcting the faulty conditions. In this class of cases the physician is apt to overdrug the patient and to disregard more rational methods, which may be less satisfactory in the beginning, but which eventually effect a permanent cure. For many years Dr. Gant has not resorted to the use of drugs for the relief of constipation, and in the meanwhile he has successfully treated several hundred cases by the non-medicinal method. In the few exceptional instances in which the patients were not permanently cured, they were relieved to a greater or less degree.

The principal features of the treatment practised by him consist of the proper education of the patient, together with the administration of enemata when necessary, massage, electricity, divulsion or division of the sphincter muscle, and valvotomy, any or all of these being carried out as the case demands. Persistence in the treatment is an essential requisite for success. Regularity in the manner of living must be insisted on. The patient should abstain from foods which disagree with him or tend to clog the bowel, and laxative fruits, to be eaten preferably in the morning or at bedtime, should be included in his dietary. Two or three glasses of water taken on rising constitute an excellent laxative, and the free drinking of water throughout the day is of service in softening the feces and stimulating intestinal peristalsis. Those engaged in sedentary occupations should take plenty of systematic indoor or outdoor exercise. In the numerous cases in which the constipation is complicated with auto-intoxication, a morning cold bath, followed by a salt rub or vigorous friction of the skin with a Turkish towel, is of much service in promoting elimination. A systematic effort (to which sufficient time must be devoted) to evacuate the bowels should be made at a given hour daily.

Dr. Gant regards the regular daily use of enemata as a most pernicious practice. In some instances, however, rectal or colonic injections are advisable early in the treatment, in order to secure necessary evacuation and prevent fecal impaction. Massage is an essential feature of the treatment. In addition to kneading the large intestine, special massage is given over the liver and small intestine and locally to the rectum. The table on which the patient is placed is so arranged that the head may be raised or lowered and the body rotated from side to side, so that the intestines may be changed from one position to another. With the palm of the hand and ball of the thumb the operator makes firm but gentle pressure over the large intestine, beginning in the right iliac fossa and following the course of the colon over to the left; accompanying the pressure by thorough kneading of the parts with the fingers. These manipulations are repeated several times at each séance, and the treatment should occupy 10 or 12 minutes. It is practised every day at first and later twice a week. If unable to pay for the services of a masseur, the patient may receive much benefit from daily rolling, while lying in a recumbent position, a cloth-covered metal or bowling ball over the course of the colon.

In combination with other measures, he has found electricity of value in many instances. The positive electrode is placed over the spine or in the rectum or sigmoid colon, while the negative is moved about the abdomen over the region of the liver, the small intestine, and the colon. As, in his opinion, hypertrophy or irritability of the sphincter muscle is an important factor in the etiology of constipation, its divulsion or division is frequently indicated. Gradual divulsion may be accomplished by the introduction of one, two and then three fingers until the muscle has become sufficiently relaxed, or by the use of the Kelly or Pratt anal dilators or of Wale's graduated rubber bougies. Forcible or rapid divulsion, for which general anesthesia is required, is best accomplished by stretching the muscle in every direction by means of the thumbs. In cases in which the sphincter is so thick and rigid that sufficient relaxation cannot be obtained by divulsion, division is necessary. After the injection of a 3-per-cent. solution of beta-eucaine into the section of the sphincter to be incised, a bistoury, guided by the finger, is introduced well above the muscle and then withdrawn; in this way all the fibres are completely divided laterally or in the posterior median line. The after-treatment is the same as that for cutting operations for fistula.

When one or more of Houston's valves have become so hypertrophied as to obstruct the descent of feces, as is occasionally found to be the case, valvotomy is indicated. Martin was the first to suggest division of the thickened valves for the relief of constipation. After describing his operation Dr. Gant stated that it was open to serious objections. Among these are its difficulty of performance, the considerable time required, the danger of hemorrhage, infection and peritonitis, the great pain due to the presence of the tampon left in the rectum, the confinement of the patient in bed for a week or more, and the fact that no part of the obstructing valve is removed. As a substitute for the Martin operation Pennington suggested a clip for the purpose of dividing the valves by pressure-necrosis. With this idea in mind, Dr. Gant has devised a fenestrated valve-clamp and forceps applicator, which render the operation extremely simple and devoid of danger. For the performance of his procedure the patient is placed in the knee-joint posture and a proctoscope so adjusted that the border of the valve crosses the center of its aperture. The applicator carrying the open clamp having been introduced, the clamp is slipped well down over the valve and released, and the forceps and proctoscope are then withdrawn. The clamp should divide the valve in from four to six days (the time depending on the amount of fibrous tissue present), and when it is then discharged with the feces it carries the section of tissue within its grasp.

This clamp operation can be painlessly performed in the office in from one to five minutes. It is attended by no danger of hemorrhage, infection or complications; no dressings are required, and the patient, who is not detained from his usual avocations, suffers but little, if any, discomfort. Furthermore, it is more effective than the cutting operation, since it removes a section of tissue nearly half an inch wide and almost an inch long, thus insuring wide separation of the remaining segments of the valve. Valvotomy, while unquestionably indicated in certain instances, is not called for in so large a proportion as its most enthusiastic advocates would have us believe. In cases of long duration it is sometimes necessary, after the rectal valves have been divided, to properly educate the patient, and carry out the various other measures mentioned in order to overcome the habitual constipation. In conclusion, Dr. Gant stated that in his experience the results obtained from the non-medicinal method were far more satisfactory and permanent than those following the use of drugs.

**The Value of Valvotomy.**—Dr. Robert T. Morris said that at first he had felt suspicious as to the number of cases in which the rectal valves constituted an obstruction to the passage of feces. He was skeptical because some of his friends failed to find these valves at all. Afterward, however, he himself had seen them congested and thickened, and it seemed to him hardly possible that any one who had observed them in such a condition could deny their evident mechanical agency in promoting chronic constipation. As to the proportion of cases in which valvotomy was of value, this could be determined only from statistics very carefully collected by experts. It was his own conviction that the percentage was fairly large, at all events large enough to be eliminated. In his personal experience he had found that in a number of cases in which he had expected prompt relief from the procedure, the good results had not been so prompt as he could have desired. In other instances, however, immediate relief had resulted. He thought there could be no question that the condition of the valves spoken of in the paper constituted the chief factor in the distress from which a certain number of individuals suffered all their lives. He here referred to the case of a young lady of a wealthy family who had been a life-long sufferer from obstinate constipation. She had had for many years the best medical advice both in this country and abroad, yet her condition remained unimproved. By valvotomy, however, she was instantly and permanently relieved. If, therefore, this procedure acted as favorably in only one case in a hundred, he thought it was deserving of recognition as a valuable resource.

**Chronic Constipation Both a Symptom and A Cause of Disease.**—Dr. Edward W. Peterson said constipation was both a symptom and a cause of a number of rectal, as well as constitutional, affections. In order to get a satisfactory result, it is necessary to treat all the factors of the condition, whether local or constitutional. It is well known that constipation frequently results from the passive congestion due to cardiac disease or cirrhosis of the liver, and also from the muscular relaxation which often follows acute diseases. Here it is desirable to give tone to the intestine, and the various measures recommended by Dr. Gant are valuable adjuncts to the treatment. Bu these will prove inefficient in cases where the trouble is due to another class of cases, such as lead-poisoning, for instance, where antidotes to the poison must be resorted to. There are many cases where the constipation results from reflex influence, and we should always try to find out the real cause.

**Causes for Constipation Which Cannot be Reached by Mechanical Methods.**—Dr. C. F. Wainwright said that in general he heartily endorsed the views expressed in the paper. There are, however, manifold causes for constipation which cannot be reached by the methods described by Dr. Gant. Especially is such treatment inadequate in those cases which have to do with the circulation, as where there is a vascular stasis on account of obstruction of the portal circulation. The same is true where constipation exists in connection with pulmonary conditions, and particularly tuberculosis of the lungs. Again, it may result from relaxation of the abdominal walls, and here the strapping of the abdomen, as advised by Dr. A. Rose, is often followed by good results in patients who have been constipated for years:

**Possible Bad Results from Valvotomy.**—The function of the rectal valves is an important one, and it is the duty of physicians to watch the surgeons, so that they may not do harm by cutting. It remains to be seen whether valvotomy may not be followed by injurious results, in consequence of the lack of support thus caused in the rectal walls.

**Adrenal Extract May be Valuable in the Treatment of Constipation.**—The importance of the ductless glands is now well recognized. When the adrenal functions are suddenly suspended, symptoms are caused which resemble those of Asiatic cholera. In a less degree, bowel symptoms are observed from chronic interference with the functions of these glands, as in Addison's disease, where constipation and diarrhea often alternate. Adrenal extracts may therefore prove very useful in the treatment of constipation.

**Are the Rectal Valves the Result of Pathological Changes?**—Dr. E. Wallace Lee said Houston's valves assumed importance not only in constipation, but also in diseased conditions of the rectum and anus, such as hemorrhoids, fissure, etc. In such he had often looked for them, and in no single instance had he failed to find them. In fact, he had found congestion and hypertrophy of all the tissues composing the rectum. He was not enough of an anatomist to say whether these valves were a normal feature of the rectum or constituted a pathological condition. Whether they could be strictly called valves or not, he must say that he had never seen any reason to believe that they were anything more than simply folds of thickened mucous membrane.

**Constipation a Disease per se.**—Dr. Joseph Fraenkel believed that chronic constipation was a disease *per se.* He spoke of its very great frequency in association with neurasthenia and hysteria, and said he had never met with an instance of these in which it was not present. When patients suffering from disease of the heart, lungs or liver came for advice, they did not ask to be treated for their constipation, which was simply incidental. Neurasthenic and hysterical patients, however, applied to the physician expressly to obtain relief from constipation. In these cases he left the nerves alone, and devoted his attention to the intestinal condition. He considered rachitis the great cause of chronic constipation, and said that most rachitical persons were born constipated. Concerning the mentioned hypertrophied valves, he was convinced that these were merely a result of constipation.

**Medicinal Treatment.**—Dr. L. F. Bishop said he always told his patients, if they did take a laxative, to take it regularly *every* night, and not simply at times when they were particularly constipated. He relied principally upon cascara, and his favorite preparation was an aromatic fluid extract. By its continued use, after a time gradually diminishing the dose, a good many cases were permanently cured, but a good many were not. He thought we must depend largely on moral influence in the treatment—the patient must be trained—and all physicians recognized the importance of measures other than drugs.

**The Paper not Surgical.**—Dr. Gant, in closing the discussion, said that his paper was by no means intended as a surgical one. In the great majority of cases he depended entirely on the various measures of hygiene to which he had alluded. Resort was had to surgery only in exceptional instances. He had made no attempt to deal with the etiology. He had treated cases of habitual constipation from carelessness on the part of the patient. Reference had been made in the discussion to toning up the intestinal muscular fibres by means of medicines, but he believed that this could be accomplished better by massage and indoor and outdoor exercise.

**The Rectal Valves Anatomical.**—Valvotomy was sometimes justifiable, but, as he had stated, was not called for as frequently as some enthusiasts would claim. As a matter of fact, he performed the operation oftener in cases of colitis than of constipation. In colitis, by the obstruction which they presented, they not infrequently caused detrimental accumulations of mucus. The valves of Houston, he wished to say, were found to be present in the fetus, in the infant, and at every age throughout life. He felt confident that he could demonstrate them in any individual to the entire satisfaction of the most skeptical. He had never examined the rectum of a patient without finding them. There were usually three valves, but sometimes four, and they passed most of the way around the walls of the bowel. In order to observe them, it was necessary that the rectum should be distended, and they could be readily seen in any individual in the knee-chest position when a proctoscope four inches long was employed. These valves were not simply folds of mucous membrane, but were made up of three coats, the mucous, the fibrous, and the muscular, the latter consisting of both longitudinal and circular fibers.

## BOOK REVIEWS.

A Compend of Diseases of Children. By Marcus P. Hatfield, A.M., M.D., Emeritus Professor of Diseases of Children, N. W. U. Medical School, Physician to Wesley Hospital, etc. Third edition, thoroughly revised, with a colored plate. P. Blakiston's Son & Co., Philadelphia.

Quiz-compends are not much used by progressive students and the compend habit, so-called, is sufficient to stamp a man as one who studies to "get through," rather than to gain knowledge. Yet there are many such books, and if we must have them it is fortunate to have them so well written as this, which represents a condensation of the author's lectures at the Chicago Medical College. We feel sorry for the children with pleurisy upon whom the author paints Corson's Pigmentum Tiglii until pustules appear, or the infant with colic to whom he administers gin. In general, however, the treatment and symptomatology are well up to date and constitute the most worthy portions of the book. Pathology is not much considered. Infant-feeding is given its share of attention, and as a quiz-compend the book is certainly above the average.

A TREATISE ON DISEASES OF THE ANUS, RECTUM AND PELVIC COLON. By JAMES P. TUTTLE, A.M., M.D., Professor of Rectal Surgery in the New York Polyclinic Medical School and Hospital, Visiting Surgeon to the Almshouse and Workhouse Hospitals. D. Appleton & Company, New York.

THIS is essentially a practical work, intended not to be once read and then cast aside but to be a constantly useful book of reference, full of counsel and assistance in the daily work of any practitioner. Few of the many books that are presented to the medical reader bear evidence of such thoughtful and careful preparation and its perusal is a true pleasure. The character of its teaching is personal to an unusual degree and reflects the experience of a well-schooled observer of long training. The historical and theoretical aspects of the subject have not been neglected and every step in the development of the study of rectal diseases is noted with copious quotations from and reference to the literature together with thorough discussions of etiology and pathology, but still the most prominent feature of the book is its practical utility. This has been achieved not only through the excellence of its matter but also through mechanical execution of a very high order and illustrations which in number and beauty have seldom been equaled in a medical work. Too much praise cannot be given to these, for nearly all are original and being the work of a single artist, form a series most pleasing and valuable in their uniformity and consistency of treatment. The colored plates alone fall somewhat short of what modern presswork leads us to expect and perhaps appear still more at a disadvantage because of the perfection of the black and white drawings.

The author has laid especial stress on examination, diagnosis and local treatment as being the points the general practitioner most needs to know. The symptomatology and differential diagnosis of each condition is given with unusual fulness and wherever non-operative treatment is likely to be of use it is discussed in great detail. Where this is not advised the operative technic is described at length and all the available methods are given, with indications as to the value of each.

Like most specialists, the author has devised a certain number of instruments, chief among which is perhaps his pneumatic proctoscope and sigmoidoscope. These are fully described and in fact the whole chapter on the examination of the lower bowel is particularly interesting, though we cannot agree with the implied freedom from risk attending manual exploration according to Simon, notwithstanding that the author has performed it more than a hundred times without any unfortunate results. The important subject of hemorrhoids is treated with great thoroughness, the author entering a plea for the much-abused injection method in certain selected cases and preferring the clamp and cautery to the ligature for routine use. The chapters on extirpation of the rectum, colostomy, etc., are all sound from the standpoint of the general surgeon and embody the latest methods, such as the use of the O'Hara clamps for intestinal anastomosis.

Every section contains original and progressive views attractively presented and it requires but little prophetic instinct to foresee for it great and lasting success and a place at the head of the literature of the subject.

A SYSTEM OF PHYSIOLOGIC THERAPEUTICS. Edited by SOLOMON SOLIS COHEN, A.M., M.D., Volume V. Prophylaxis—Personal Hygiene—Civic Hygiene—Care of the Sick. P. Blakiston's Son & Co., Philadelphia.

THE present volume is one of the most interesting of this series. It is perfectly true as intimated in the preface that it is an introduction to the Science of Medicine, treating, as it does, especially of the preservation of health and the prevention of disease.

Three different parts are included in this present volume of 516 pages. The first, on the Origin and Prevention of Disease is by Drs. McFarland, and W. W. Babcock. Here are discussed very thoroughly the etiological factors concerned in the production of disease. Immunity, microbic infection, age, sex, heredity, nervous influences, abnormalities of development, auto-intoxications, physical causes, heat, light, cold, electricity, the atmosphere, climate, season, poisons are all thoroughly discussed and their relationships to the general problems of disease outlined. Under the head of sociologic causes, the authors speak of density of population, dissipation, sexual excesses and occupation.

An extremely interesting chapter is on the extrinsic causes of disease in which a thorough handling of the organic factors, those of animal and vegetable origin, is given. The diffusion of disease, infection of vegetables, invasion of the body by micro-organisms are thoroughly treated and there are short chapters on the different diseases due to animal and vegetable parasites.

In Part II, the subject of Civic Hygiene is discussed by Dr. Henry Leffman. It is a very thorough and readable presentation of how a city should be sanitarily policed, what to do with the garbage and sewerage, and full discussions on the subject of plumbing and ventilation. Finally, Part III, by Dr. A. Abrams, discusses individual hygiene and the nursing and care of the sick.

The book is a very thorough one, highly suggestive and extremely practical. It is a worthy addition to an exemplary series.

## BOOKS RECEIVED.

REPORT OF THE COMMISSIONER OF EDUCATION. Vol. II. Government Printing Office.

BACTERIA IN DAILY LIFE. By Mrs. Percy Frankland. 12mo, 216 pages. Longmans, Green & Co. New York and London.

PROGRESSIVE MEDICINE. March, 1903. 8vo, 450 pages. Illustrated. Lea Brothers & Co. Philadelphia and New York.

THE INTERNATIONAL MEDICAL ANNUAL. 1903. demi 8vo, 739 pages. Illustrated. E. B. Treat & Co. New York and Chicago.

PROCEEDINGS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. Fifty-eighth Annual Meeting. 8vo, 333 pages. Illustrated.

LES OBSESSIONS ET LA PSYCHASTHENIE. By Drs. F. Ramond and P. Janet. Vol. II. 8vo, 543 pages. Illustrated. Felix Alcan. Paris.

TRANSACTIONS OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY. Thirty-eighth Annual Meeting. 8vo, 686 pages. Illustrated. Hartford, Conn.

# THE MEDICAL NEWS.

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## SPECIAL ARTICLES.

### MEDICAL EDUCATION IN THE UNITED STATES.*

BY FRANK BILLINGS, M.S., M.D.,

OF CHICAGO, ILL.

ONE of the chief objects of the organization of the American Medical Association was the elevation of the standard of medical education in the United States. In the president's address, the Father of the Association, Dr. N. S. Davis, stated that "the purpose of the organization was the improvement of our system of medical education and the direct advancement of medical science and practice."† That medical education in that day was defective, as recognized by the founders of the Association, is shown by the report of the Committee on Medical Education in the year 1850. The committee said, in part, as follows: "Medical education is defective because there are too many medical schools; the teachers are too few. There are too many students. The quantity of medicine taught is too limited; the quality too superficial, and the mode of bestowal of the honors of medicine too profuse and too unrestricted."

For many years the Association showed its interest in and attempted to influence the elevation of the standard of medical education through a committee on medical education. The Transactions of the Association of the earlier years show many reports of this committee, which display much thought and effort on the part of the Association to improve the status of medical education at that period of time. James R. Wood, as chairman of the committee, in the year 1858, recommended that the various medical colleges of America be requested to send delegates to a convention of medical colleges, to consider the matter of medical education. This movement finally resulted in the formation of the Association of American Medical Colleges, which thereafter represented, to a degree at least, the American Medical Association in its efforts to improve medical education. Later, the Southern Medical College Association was formed. Together these associations represent about 80 per cent. of the regular medical schools of the country, and these colleges have, in a general way at least, fulfilled the minimum requirements prescribed by the rules of the associations in regard to the preliminary education of students, the length of the college course, and the character of the curriculum.

About twenty-five years ago the Illinois State Board of Health, through the splendid efforts of Dr. J. H. Rauch, its secretary, made a report on the number and character of the medical schools of the country. This board adopted a minimum of requirements of medical schools as a necessary step toward the recognition of their diplomas by the State Board of Health of Illinois. This minimum requirement of the State Board of Health was gradually increased from time to time, with the result that many of the medical schools were obliged to raise the standard of medical education to enable their graduates to obtain licenses to practice in Illinois. Other states followed Illinois in requirements for better methods of medical education, with the result that the standard of medical education in the country was very much improved.

*Medical Schools of the Country.*—In the earlier days of our country, the need of physicians was met by the organization of medical schools which were, as a rule, proprietary in character. These schools attempted the education of physicians on the then existing conditions of medicine by teaching, in a didactic way the principles and theories of medicine and surgery. The branches usually taught at that time consisted of anatomy, physiology, chemistry, materia medica, obstetrics, the practice of medicine and of surgery. But little opportunity was offered in the great majority of the schools for extensive, practical teaching in anatomy or chemistry, and but a moderate amount of clinical work in the so-called practical chairs. The course of medicine in the college consisted of two annual sessions of four or five months. The course was not graded. The student attended all the lectures and clinics taught during his first year, and the second year was a repetition of the first. This class of schools was rapidly increased in the course of time. The chief reasons therefor were the fact that it was recognized that a connection with a medical school was profitable, directly and indirectly. The prestige which the teacher enjoyed among the graduates and the laity brought him a remunerative consultation and private practice. In most of the states it was easy to incorporate and obtain a charter for a medical college. It cost comparatively little to conduct and maintain the institution. Lecture rooms were obtained at trifling cost. The dissecting room was not worthy of the name of a laboratory, and the chief expense in maintaining it was the cost of dissecting material, which was usually deficient in quantity and poor in quality. Medical schools were organized all over the country, without reference to the needs of the people. Medical education was prostituted. To obtain a sufficient number of students many institutions showed a most degraded disregard of the moral and mental qualifications of the matriculates. The income of the school was wholly derived from the tuition of students, and no applicant was turned away who had the cash with which to pay his way. To add to the facility of obtaining a medical college course, there were organized in some cities evening schools, the hours of college attendance occurring from 7 to 9 or 10 o'clock at night. These sundown institutions enabled the clerk, the street-car conductor, the janitor, and others employed during the day to obtain a medical degree.

In 1877 there were sixty-five medical schools in the United States. In 1882 this number had increased to 89, and 1901-2 to 156. The enrolment of students and the number of graduates have also increased, in spite of the fact that the requirements for matriculation and graduation have been increased. In 1882 there were* 14,934 matriculates, and this number was increased in 1901 to 26,417, and in 1902 to 27,501, an increase of about 100 per cent. in twenty years.

The number of graduates in 1882 was 4,115; in 1901, 5,444; in 1902, 5,002, an increase of about 25 per cent. in twenty years. If, in 1850, there were too many medical schools and too many students, what can we say of the condition to-day?

It has been estimated that there is an average of one physician to 600 of the population of the United States at the present time. The natural increase in the population of the country, and the deaths in the ranks of the profession, make room each year for about 3,000 physicians, based on the proportion of one physician to 600 of the population. With 5,000 or more graduates each year, a surplus of 2,000 physicians is thrown on the profession, overcrowding it, and steadily reducing the opportunities of those already in the profession to acquire a livelihood. The evil of an overcrowded profession is a sufficient cause of complaint, but the cause thereof is the important point for us to consider and, if possible, remove. To correct the evil, the ease and facility with which a medical degree may be secured in this country must be diminished. As before stated, there are now 156 medical schools in this country. Of these, 30 are sectarian, and 126 are so-called regular schools. Fifty-eight are medical departments of universities, of which 24 are state institutions. The relation of the medical school to the university in most instances is a nominal one only. In but few of them is the control of the faculty, or the finances of the medical department, vested in the university proper. In a very few of them the sciences fundamental to medicine are taught in the university.

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* Abstract of President's address, delivered at the Fifty-fourth Annual Session of the American Medical Association, at New Orleans, May 5 to 8, 1903.

† Transactions A. M. A., Vol. XVI, 1865.

* The Journal A. M. A., Vol. XXXIX, No. 10, p. 574.

*Scientific Medicine.*—The great and important discoveries of Pasteur and the practical methods devised by Koch in bacteriology marked a new era in medicine. Before the facts made clear by these discoveries, the hypotheses and theories of other days have disappeared. Our knowledge of man and the lower animals and of the diseases and evils which afflict them has been revolutionized within the last twenty years. The advance in medical knowledge has been greater in that period than in all preceding time.

*Methods of Medical Education.*—The phenomenal evolution of medicine has multiplied the subjects of medical study. The character of these sciences requires that they shall be taught by the laboratory method. The laboratory method, too, has been adopted as the chief method of instruction in anatomy, pharmacology and chemistry, formerly almost wholly taught in medical schools by didactic lectures. The laboratory method, while necessary to the proper and practical instruction of the student, involves an expense which is appalling when compared with the methods of teaching formerly practised in all schools, and still adhered to in many medical schools. The method is expensive, inasmuch as it involves more extensive buildings, much expensive apparatus and an increase of the teaching force. The instruction must be individual or to small groups of laboratory workers, and this involves also an extension of the time of instruction. A physician engaged in private practice can not possess and retain the general and technical knowledge necessary to enable him to teach one of the fundamental sciences properly, nor can he devote an adequate amount of time to it. The teachers of these fundamentals must be investigators in the province of their respective sciences. They must give their whole time to the instruction of students and to original investigation. The thoroughness and accuracy of the training of the special senses, and in experimenting, which a student will receive from such teachers in properly equipped laboratories, will make him keen in intellect and sound in judgment. His desire for knowledge will be stimulated by the atmosphere of his surroundings, and will awaken in him a consciousness that through him and his work the knowledge of the world will be increased and humanity benefited thereby. But teachers of this character must be paid salaries quite as large as the remuneration of professors in the departments of arts, literature and science. The salaries of such professors and of the corps of assistants which the laboratory method implies make the cost of the university or college far beyond the income which could be derived from the tuition of students. I believe it has been estimated that the laboratory method of instruction, now followed by all first-class institutions of learning, costs annually from $400 to $500 per student. But, great as the cost seems, it must be conceded that the present status of medicine demands the thorough instruction of students in these fundamental studies. It matters not whether his future may be that of a teacher or a practitioner of medicine. In either event, he must apply his knowledge of the fundamental sciences to his work, and the result will depend on the thoroughness of his education.

*Applied Medicine and Surgery.*—To enable the student to utilize the knowledge of a thorough training in anatomy, physiology, chemistry, pharmacology, physiologic and physical chemistry, embryology, neurology and pathology, he should be afforded facilities of equal rank in clinical medicine and surgery. To supply the student with proper clinical facilities involves several important features. Special hospitals, which would be absolutely under the control of the medical school, would be necessary. The hospital should be constructed with a definite idea of teaching students and of making researches into the nature, causes and treatment of disease, as well as to care for a definite number of patients. Hospitals for general medicine, surgery and obstetrics would be essential. Such hospitals, with laboratories and equipped with instruments, apparatus and library, would cost for their building and maintenance a very large sum of money.

It would be most practical to make the clinical work of the third year a clinical drill and experimental course, given in the special hospitals, and assign the students of the fourth year to the general hospitals and to the clinical teachers who are in private practice. All the general hospitals and dispensaries controlled by the medical schools could be utilized in the fourth year for this purpose, and afford the student an abundance of clinical material and the benefit of the experience of many clinical teachers. Many of the assistants in the special hospitals, of the third year course, would doubtless engage ultimately in private practice, and would, because of their scientific attainments, make excellent clinical teachers in the fourth year. A medical school conducted on the high plane advocated must necessarily be under the control of a university. Such a medical school would cost an enormous amount of money, and this can be commanded only by the trustees of a university of the highest order. That the money for the purpose of establishing and maintaining university medical schools with research hospitals and university extension clinical courses will be forthcoming can not be doubted. The world is awake to the great discoveries recently made in medicine. The wealthy men of this country have had their interest aroused as never before in reference to the possibilities and benefits which medical investigation will give to mankind. They now recognize that they and all posterity will be benefited by every new fact discovered in medicine, and that physicians thoroughly and scientifically trained are necessary to conserve the health of the people.

*Education Preliminary to Medical Study.*—The subject of the educational requirements for matriculation in medical schools has been discussed at many meetings of this Association in its earlier years, and later by the college associations, by the American Academy of Medicine and also by the various State boards of health.

The requirements were at first lamentably low, and the efforts of the Committee on Education of the American Medical Association and of the college associations had but little effect, because they possessed no legal power to control the schools.

We must admit, too, that there are medical schools of such a low educational grade that they have no right to demand of their matriculates as much even as a common school education. This fact that low-grade medical colleges exist is one of the most satisfactory explanations of the difficulty encountered in elevating the standard of preliminary requirements.

To get at the root of the matter the medical college must be brought up to the proper educational standard, and then, and then only, can be made a proper preliminary educational requirement.

*University Medical College.*—The present status of medical science requires and demands a university medical college course. By university medical college is meant a medical school which is directly connected with and a part of a university; the university fixing the requirements and controlling the admission of students to the medical department. The method of teaching both the fundamental and the clinical branches is on the principles outlined above. To properly prepare for such a course the student should have, as a minimum preparation, at least two years of study in a good college or university. The requirements to enter a good college or university would insure a sufficient knowledge of the ordinary school branches and also Latin or Greek. During the two years' course in college his time would be well spent in the study of English, French, German, mathematics, history, philosophy, physics, chemistry, general and organic, and qualitative analysis, comparative anatomy and general biology. The amount of time to be devoted to each of these subjects would be the same as that of students of general science, as arranged in all college curricula, with the exception of a much more thorough course in chemistry, biology, physics and comparative anatomy.

*Outlook of Medical Education in the United States.*—Medical education must advance to its proper level if it complies with the present status of the medical sciences and the demands which continued evolution in medicine promises.

What does this imply? It means that the private—the proprietary medical school which is conducted for commercial reasons must go. Acknowledge, as we must, the great value which the best of these schools have been to the profession and to the country, all such schools have lived past the time when they can be of value. The continuation of these institutions henceforth will be harmful. They can not command the money to build, equip and maintain the laboratories and hospitals which a proper and adequate medical education demands. In the past their graduates have furnished the many great and influential medical and surgical clinicians of this country. In former days a graduate poorly prepared has been able, by indefatigable labor and post-graduate work, to place himself in the front rank as a clinical physician and surgeon.

To-day medical science demands primary instruction to fit a man as an investigator and scientific physician. If not properly educated he can not grasp the great problems which medicine presents to-day as he did the more simple clinical facts which comprised the art of medicine and surgery a few years ago. In the future medicine must be taught in the large universities of the country and in the state universities which are situated in or near large cities, where an abundance of clinical material may be commanded.

The State university and the college which desires to teach medicine, and is so situated that it can not command clinical material, should confine itself to teaching the sciences fundamental to medicine. These should be taught as pure sciences, and should be included in the course for the degree of S.B. A college or state university ambitious to teach the medical sciences can do so without great cost. To attempt to teach applied medicine without proper and adequate hospitals, and with an insufficient number of patients would be irrational, nor can they command the necessary funds with which to do it. From such colleges and state universities the students could go to the larger institutions which are able to furnish the proper facilities for teaching applied medicine and surgery.

The general hospitals of many of the cities, now used by proprietary schools, could be utilized as clinical schools for both undergraduate and post-graduate teaching, conducted by the clinical teachers in the existing proprietary schools. Indeed, these hospitals could be utilized as clinical university extension courses. Necessarily they would have to be under the control and direction of a university medical school.

How many schools may be necessary to educate the number of doctors of medicine required annually in the United States? The question one can not answer, but it is safe to say that 2,500 graduates annually will fully supply the demand. This would imply about 10,000 to 12,000 matriculates. A minimum number of twenty-five and a maximum number of thirty-five medical schools should offer sufficient facilities to educate 10,000 students. The various state universities and the colleges which offer adequate science courses would educate a great number of students in the fundamental branches, or in the first two years of the medical course.

*Medical Reciprocity Between the States of the Union.*—The low requirements of some medical colleges, and the want of uniformity in the requirements for a license to practice in the different states, has resulted in a condition which entails much hardship on a physician who desires to remove from one and to engage in practice in another state. The rules of most State boards of medical examination and of health are so stringent that a physician or surgeon of years of experience and of acknowledged skill and education, and the specialist who may be renowned in his field of work, are obliged, like the recent graduate, to take an examination in all of the branches of medicine and surgery in order to secure a license to practice in the state of his adoption.

To correct this evil it has been suggested by a member of the American Medical Association, and concurred in by others, that a national board of medical examiners be organized; that the board hold examinations at different seasons of the year in the various large cities, and that the diploma so obtained shall be recognized as a license to practise in any one or all of the states and territories. The measure suggested seems to be practical and feasible.

In addition to this plan, it remains to be said that the degree granted by the future university medical school will be undoubtedly recognized as an evidence of fitness to practice in any state in the Union. When we shall have a less number of schools and annual graduates the various states may safely and rationally become more liberal and discriminating in the conduct of their office.

*Influence of the American Medical Association.*—The American Medical Association should maintain its interest in the elevation of the standard of medical education, one of the chief reasons of its organization. Its influence in former years was principally moral. This was of considerable value, for the reason chiefly of the high ideals of the founders and first members of the Association, who advocated and fought for a higher standard of medical education. In the future its influence should be manyfold that of the past, for with the reorganization of the profession, the better methods of conducting its affairs, the increased and probably very large membership, and its great medical journal, it should wield a great influence for good.

As the direct agent by which the American Medical Association may exert its influence in the elevation and control of medical education, the Committee on Medical Colleges and Medical Education should be made permanent and should be given adequate power and sufficient annual appropriation to make its work effective.

This Association should, therefore, stand for, and should use its whole power to improve medical education in this country. It is said that we never exceed our ideals in practice, and that if we lower our ideals our conduct sinks to a lower level.

The American Medical Association should take as its ideal and standard of medical education the university medical college, with all the name implies in regard to the fundamental medical sciences, and to the clinical branches. It should use its influence to drive out of existence those proprietary medical schools, which are conducted solely as money-making institutions. These measures can not be accomplished at once; but medical science demands it, the profession demands it, the people demand it, and look to the American Medical Association as the chief influence which shall accomplish this end.

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## SOCIAL CONDITIONS IN AMERICA IN THEIR RELATION TO MEDICAL PROGRESS AND DISEASE.*

BY J. M. ANDERS, M.D., LL.D.,
OF PHILADELPHIA.

Another spacious year with its varied channels of energy and activity in medicine has closed. While a faithful chronicle of the facts, data and achievements showing the progress of internal medicine for that brief period would have proved an appropriate topic, I have availed myself of the choice privilege granted by this Association of selecting my theme, and purpose to consider the subject of the relation of American social conditions to the progress of medicine and disease and the import of modern economic and professional tendencies in forecasting the immediate future.

While there are certain things and events common to all in our psychical and social development, enlightened society will grant that the larger events in American history, assuming that "the first duty of society is the preservation of life and the comfort of its units," have not been so much dominated by legislative authority and social customs as by the march of science, more particularly medical and hygienic. In a country as vast as ours, however, there could be no uniform law covering the details of results in matters medical. These have been in the past and will in the future vary somewhat with the climate, physical conditions, degree of culture and opportunities presented by the widely separated regions. As a consequence, in displaying proportions and the practical results of scattered sections, the final adjustment of their claims only becomes perceptible and appreciable in their broader and higher generalization. The whole range of American historic data and events indicates an imperishable foundation of scientific achievement, and furthermore establishes firmly a relationship between medicine and the scientific principles underlying social conditions and phenomena that is both positive and vital. As touching the American medical history of the long past, we can see the major advances and their influence on social laws and the progress of civilization, only by grouping data and established facts and applying the process of generalization to these composite phenomena. In this connection it is to be regretted that our possession of unclassified facts is increasing with uncomfortable rapidity. A comparative and historic study of the medical literature of America, taking any of the older countries as a standard of comparison, in respect to this method of generalization, can scarcely prove even measurably satisfactory. Much of the history of native medicine is crude, and it were impossible to give it either crystallized or concrete form. Epoch-making discoveries and important, far-reaching scientific effort is justly the boast of the American profession. Systematic effort at a rigid classification of facts by the modern statistical method, however, has not been made, and only a partial scientific use of the ever-advancing events for the different historical periods has been attempted.

The concrete, comparative and historical method of study which alone furnishes a proper basis for generalization and serves to point out the relations of medicine to other human activities, would insure a wholly fresh treatment of the earlier medical annals of America. The physician in his economic or professional dealings has not followed his self-interest in comparison with his measure of enlightenment, to an equal extent with men in other lines of human activity, but the fruits of his unselfish labors are, when taken collectively, presented in the form of a heterogeneous mass of details. It should be recollected that it is only the larger events, the accurately grouped facts after the method of generalization to which I have referred, that go to make up the bulk of medical history and medical law. The practical results of the method of simple generalization would show clearly the final utility of medical and sanitary knowledge in the social universe and manifest its relation to everyday life. Obviously in a young republic like ours something must be allowed to propinquity—to nearness to a confusing and disordered mass of facts and phenomena.

It has been well said: "A landscape is beautiful because distance has reduced its chaos of details into order."

Those endeavoring to make a personal study of the medical and sanitary requirements of our insular possessions, more especially under new and changed conditions, can not hope to gain more than a fragmentary knowledge. Much important and accurate information touching the social, climatic and medical conditions and necessities, however, is available through the Division of Insular Affairs, in the War Department at Washington. It is clearly incumbent on the organized profession of the United States to undertake studies on a larger scale than that of individual effort. Moreover, the interrelations between tropical medicine and the sciences before alluded to, *i.e.,* social and sanitary, is a question for the immediate future; thus step by step may we hope to erect a stairway that will lead to a new temple of knowledge.

The spirit of undue haste which characterizes our national life is nowhere better exemplified than in American medical literature, despite its many virtues, its broad, liberal spirit and freshness. Never, in American history, whether deliberately or unconsciously, has so much current literature been placed at the disposal of physicians. Too generally medical thought and opinion, which is not of necessity medical truth, finds literary expression. The obvious weakness of it all is an enforced tendency to waste one's time in reading matter which is unapproved by common opinion. Extending this thought, it may be questioned whether to carry views and ideas beyond the domain of existing knowledge does not hinder rather than facilitate progress.

There is a list of honor among American writers, and it embraces authors whose literary product shows not only a sharp scrutiny of facts, but also the highest and most characteristic utterances in medicine. Indeed, the worth and power of American medical literature, either in its content or method, scarcely receives an unprejudiced estimate abroad.

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*Abstract of an Address on Medicine delivered at the Fifty-fourth Annual Meeting of the American Medical Association, held at New Orleans, May 5 to 8, 1903.

In the field of letters we point with inordinate pride to the late Dr. Oliver Wendell Holmes, and our contemporary, Dr. S. Weir Mitchell. Fiction by medical authors lives and will live in America.

America stands in need of further reform in medical education and the immediate establishment of one authority—one licensing body; and self-created schools must place themselves in a position in which they can worthily assist in the execution of a scheme of higher national medical education. Professional ascendency in future will demand the creation of a homogeneous and adequate standard of qualification for entrance into medical schools.

The relation of social conditions to disease is a topic that is becoming more and more insistent with the reflections that are the natural accompaniment of advancing knowledge.

A backward look reveals an embryo nation steeped in an arduous task, the subjugation of a continent, at the expense of unceasing physical toil. This necessitated an open-air existence, which resulted in a vigorous, hardy race. Then followed the integration of frontier villages, of larger and smaller towns, and life meanwhile became brighter and more piquant. For long generations the abandonment of rural life, the changed habits of living, the enforced pursuit of new and less healthful callings, too often from motives of personal comfort and even social expediency, and the universal tendency to overcrowding in town populations, resulted in a modification of the character and incidence of all leading diseases. It goes without saying that respecting the effects of our social conditions and climate on disease, the particular standpoint of our fathers was radically different from that of their children. Floyd M. Crandall has recently directed forcible attention to the fact "that never have such radical changes been witnessed in the habits of life and in human diseases as those in this country during the last half century."

One point of common agreement is that as a result of the rapid advances in sanitation and improved methods of treatment, there has been a notable decrease in prevalence and fatality of most infective diseases, particularly those more or less fostered by overcrowding (*e.g.*, phthisis, diphtheria, diarrheal diseases, etc.). Three well-defined classes, however, have, according to the census for the decade ending May 30, 1900, distinctly increased; they are cancer, affections of the kidneys and the degenerations, fatty and fibroid. Thus during an increase in the population of 50 per cent. in the United States myocardial degenerations have increased 150 per cent. and certain types of chronic nephritis have also risen in frequency to nearly 200 per cent. The determination of the causes of this rapidly increasing frequency of these morbid states is clearly the task of the medical profession.

Respecting the degenerations—myocarditis, arteriosclerotic changes and kidney diseases—Crandall says: "The power of alcohol in the form of malt liquors to produce degenerate changes is so well known to pathologists that the conclusion is irresistible that the radical increase in these diseases comes largely from changed drinking habits."

The notable increase in these morbid conditions, however, is not due to a single cause, and substantial progress can not result from too much emphasis on any one agency whose undoubted potency remains undemonstrated.

It is probable that a more universal application of refined methods of diagnosis accounts in a measure at least for the apparent disparity in the number of cases of nephritis and myocardial degeneration in recent times as compared with the showing of older statistics.

The census between 1890 and 1900 indicates an increasing prevalence of two additional diseases, in respect to both of which progress in our knowledge has been slow and never encouraging. I refer to diabetes mellitus and lobar pneumonia. The census previously referred to indicates that chronic diabetes mellitus has nearly doubled in point of frequency in a single decade.

Pneumonia, like other acute infections that prevail epidemically, shows a wave-like character, on comparing different years for the same locality. Exclusive of epidemic outbreaks there is an evident tendency to a preponderating incidence in overcrowded districts, and among the impoverished classes. Thus the average mortality rate for four years in New York, taking the eight wards which are most densely populated, from the tabular list is 18 per cent.

The fourth, sixth, seventh, tenth, eleventh, thirteenth, fourteenth and seventeenth wards of New York city were embraced in this estimation. In contrast with the figures just given, eight wards representing the most sparsely settled portions of the city of New York (*e.g.*, first, fifth, eighth, ninth, fifteenth, sixteenth, eighteenth and nineteenth) gave for the same period of four years an average mortality of 14.3 per cent. It was observed in the compilation of these mortality statistics that an elimination of the epidemic periods would make the differences in percentage dependent on the population somewhat greater.

In arranging the statistics for Philadelphia I have included only those wards in which the inhabitants were equally distributed throughout the entire ward. Per contra, wards having large area and a low population, per acre, but this population located in certain sections of the ward only, have not been included. Thus the following wards became available for the purpose of contrasting those giving the highest with others showing the lowest mortality: First, second, third, fourth, fifth, sixth, seventh, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, sixteenth, seventeenth, eighteenth, nineteenth, twentieth, twenty-eighth, twenty-ninth, thirtieth, thirty-first, thirty-second and thirty-seventh. The eighth ward was not included on account of being inhabited principally by a better-to-do class and on account of containing the Pennsylvania Hospital, the former condition lessening the liability of pneumonia, while the latter institution named would tend to increase the mortality from this disease since many of its patients come from the third, fourth, fifth and sixth wards.

The portion of the city west of the Schuylkill River was excluded from this computation for reasons similar to those just mentioned.

Out of the 25 wards included in our figures I have estimated a percentage of deaths from those showing the most dense population per acre, allowing for the location of hospitals, homes, etc., (*e.g.*, second, third, fourth, seventh, thirteenth, seventeenth and nineteenth wards), and I find the percentage of deaths from pneumonia to be 12.8 per cent. Those wards showing less dense population, the first, ninth, tenth, sixteenth, twenty-eighth and thirty-second, gave an average of 9.5 per cent.

The second, third and fourth wards were occupied largely by foreigners (Italians, Russians) and showed the highest percentage of deaths from pneumonia, while the seventh ward, which contains a large colored population, also shows a very high death rate.

As shown by MacDougall's statistics, unfavorable occupational conditions probably have less effect in causing pneumonia than phthisis. In my own investigations it was observed that divisions of Philadelphia having an industrial population modestly, though comfortably housed furnished a death rate but little in excess of that of the sections inhabited by the well-to-do. The whole subject of occupational diseases, eminently important to the medical world, is closely united with the social and economic conditions of the wage-earning classes, but its consideration here would lead me too far afield.

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## CANCER AND IMMUNITY.*

BY A. F. JONAS, M.D.,

OF OMAHA, NEB.

On such occasions as this we take great pleasure in recalling the past and dwell with great delight on the achievements along the lines that have most engaged our attention. We, as surgeons, especially those whose professional activity began in the pre-antiseptic period, review the successive changes from that period of expectancy to the present period of aseptic accuracy with the greatest satisfaction. No one can fully appreciate the present status of surgery who is not personally familiar with the period when wound complications were the rule and when faith was pinned on the belief in "laudable pus."

However great the change has been in surgical mortality, in the great improvement in wound repair and in the comparative freedom from wound complications at present, when we consider the number of diseases treated surgically, we must confess that many problems remain unsolved. We are not prepared to say, even now, as Boyer did in his great work. Traite des Maladies Chirurgicales (1814-1822), that he believed that surgery had reached perfection. The great advances of the past have taught us the imperfections of the present and have pointed out to us the lines of research for the future.

At the outset, we are not unconscious of the fact that the profession itself is not yet agreed on many well-founded propositions. Many still cling with too much tenacity to old and deeply-rooted doctrines. Progress has been so rapid. The surgeon has, perhaps, been in advance of the physician along scientific and practical lines. The physician has observed that the surgeon has gradually invaded his field, thus creating some antagonism, but it has become less apparent and more cooperation has been the rule since bedside observation and a clearer pathology have demonstrated the actual conditions.

In this connection, we are convinced that there is still too much difference of opinion between the physician and the surgeon regarding the so-called borderland cases. In that class of affections which primarily are so-called medical, and later may become surgical, in which the early stages are obscure, where no positive diagnosis can be made, where there is no improvement from the usual internal treatment, these constitute a class where an exploratory incision would not only make a diagnosis clear, but would frequently lead to a cure.

Still, too much time is wasted in the medicinal treatment of such affections as goiter, tubercular lymph nodes, pulmonary abscesses and gangrene, empyema, abscesses and tumors of the liver, obstruction of the biliary passages, diseases of the pancreas and tubercular peritonitis. Chronic Bright's disease and ascites due to hepatic affections, always believed to be purely medical, have recently received the attention of surgeons and the success has been sufficient to give much encouragement. The foregoing constitute a class of borderland cases in which it is often impossible to state where medical management ends and where surgical treatment begins.

Surgical advancement in the future will not consist so much in the radical changes in operative technic as in improvement in diagnosis and diagnostic aids. Many of our diagnostic formulæ are even now undergoing complete changes, and the future will lead us to a precision in the recognition of disease that we little dream of now. The early recognition of malignant disease is a problem of future development, especially malignancy affecting the internal organs. With our present aids it is impossible to recognize internal cancers sufficiently early to do a radical operation. Our only course at the present is an exploratory incision as soon as reasonable grounds for malignancy exist.

The field that seems full of promise and gives us hopes for great expectations in the future is that of immunity and immunization. It now seems that many tissue changes will be solved along these lines.

From our present viewpoint the question of immunity seems to tower above and overshadow all others. It involves the greatest problems for the future investigator to solve. Out of these researches will be evolved methods for the exact treatment of that great list of surgical affections which, at present, we can fortunately, to a great measure, avoid by exact asepsis and can control, to a great extent, by antiseptic measures when once developed. But we still stand helpless in the presence of severe forms of septicemia, pyemia, tetanus and other toxic invasions. Infections sometimes occur after the most carefully executed operative procedures. Accidental infections will always comprise a large proportion of our surgical material, a group of cases that furnishes a fatality all too great.

Our present helplessness in the presence of extreme toxemia, we must confess, lies in our imperfect knowledge of the exact conditions under which the toxins operate. We may say, in a general way, that toxic bodies attack and destroy cellular elements. When, however, we study this question of infection in a more serious manner, we find that a flood of light has been thrown on this problem by Ehrlich and his followers.

The two greatest problems of the future, cancer and immunity, shall engage our attention to-day. Malignant disease seems to be on the increase. We stand so helpless in its presence when fully developed that we exert our feeble energies and grasp eagerly for any fact that seems to offer new light for its better understanding. It will be our effort at this time to, as briefly as possible, review the more important facts known regarding the etiology of cancer and then, after making clear to ourselves the revelations thus far made in the recent studies of immunity, determine, if possible, what relations, if any, exist between the two.

These considerations were prompted by personal observations made in a number of cases of undoubted malignancy that indicated the probable infectiousness of cancer. It is well known to us all that the infectiousness of most infectious diseases was first determined clinically and that the clinical observations were later determined and confirmed microscopically and experimentally. The cases to be here related came under the author's personal care, and it is hoped that they may serve as contributory evidence to the observations already recorded by others *that malignant disease, under certain conditions, is infectious.*

*Case I.*—Mrs. H., aged forty years, of spare build, very small amount of adipose tissue, presented in the outer and upper quadrant of the left breast a hard, nodular, painful, movable, walnut-sized growth, of one year's duration. In the axilla could be felt a hazelnut-sized nodule. She had frequent lancinating radiating pains in the breast. There were no evidences of acute or subacute inflammatory signs, no local redness or elevation of temperature. The clinical diagnosis of cancer of the breast was made and a radical operation was advised. Various family matters prevented her from submitting to an immediate operation, so that several months passed, after which it was observed that the neoplasm had diminished in size and it finally disappeared.

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* Oration in Surgery, delivered at the Fifty-fourth Annual Meeting of the American Medical Association, held at New Orleans, May 5 to 8, 1903.

It may be urged that this may not have been a cancer or that no one should make a diagnosis unless there be a confirmation by the microscope. Is the microscope always certain? We have all observed cases that ran a clinical course of malignancy after the microscopic findings indicated benignancy, and vice versa. The pathologist always inquires after the clinical features. He is disinclined to give an opinion unless he can know something of the history and symptomatology. The above case, in every detail, resembled many others that were demonstrated microscopically to be malignant, consequently it would appear that we are justified in the clinical diagnosis of cancer.

*Case II.*—Mrs. J., age thirty-five years, presented herself with an inoperable, extensively ulcerating carcinoma, involving the outer half of the right breast. The breast was unusually large. The outer portion of the ulcerating surface had been in constant contact with the upper and inner side of the arm. Portions from both breast and arm were removed for microscopic examination and proved to be alveolar carcinoma. No operation. She died in three months.

*Case III.*—Mrs. D., age thirty-five years. She came under observation with a typical epithelioma of the cervix uteri. The vagina was large and relaxed, so that the neoplasm rested in contact with the lower portion of the posterior vaginal wall. Hysterectomy was recommended, but was refused. She presented herself again in two months, in which time there had developed an epithelioma at the point of contact between the cervical growth and the posterior vaginal wall. An operation was done, but the patient died from recurrence eight months later.

*Case IV.*—Mrs. G., age forty-five years. Came under observation with a typical cauliflower growth involving the cervix uteri. Small particles were removed, which proved, microscopically, to be carcinoma. The uterus was fixed, the growth appearing to be too extensive for operative interference. No operation was advised. After several months the neoplasm became smaller and gradually disappeared, the uterus becoming movable. At the present time, eight years later, she appears well.

Here we have four cases of undoubted cancer, each one of which presented some of the features of an infection, as in lupus or syphilis. Cancer is extremely slow in its development, its premalignant stage often lasting many years. This fact possibly may account for the negative outcome of inoculative experiments hitherto conducted. This long developmental stage is not unlike lupus, leprosy and other forms of undoubted infection. In two of our cases we observed secondary growths which appeared at points where the primary neoplasm was brought, more or less continuously, in contact with previously healthy surfaces, a very common occurrence in nearly all forms of infection. In two of our cases the neoplasm disappeared spontaneously, the disappearance depending, no doubt, on some form of katabolism not yet understood. The elucidation of this form of cytomorphosis will give the key to the control, inhibition and elimination of the atypical cell proliferation which constitutes malignancy.

The term cancer, so commonly employed, refers to growths made up chiefly of epithelial cells. There is really no good reason why the term cancer should be limited to epithelial growths. Cancer signifies "crab." It was originally used to signify malignancy and meant connective tissue growths as well as those of epithelial origin. For our purpose at this time we will limit the term cancer to epithelial neoplasms and we will confine these considerations to its etiologic factors.

The mystery of its origin seems as deep almost as in the days when cellular pathology was unknown. No problem in pathology has received more thought and speculation, no subject has had bestowed on it more earnest effort and unremitting toil. Regarding its etiologic evidence we must confess that we have only a mass of negative proof. When observers believed that they had found the specific organisms, scores of workers in the same field soon demonstrated their error. So, to-day, we can only say that the evidence which shows what we do *not* know of the cause of cancer is voluminous, and we must admit that we know little of its etiology.

We know something of its cell characteristics. We know that malignant disease is essentially a cell proliferation that has, biologically, many features that are opposed to the physiological tissues in which they take their origin. We find an atypical life history in the cancer cells. The nucleus divides in an asymmetrical way. We note that unusual karyokinetic figures in the nucleus are usual in new growths, pointing to changes in the cellular life history. Regarding carcinoma, certain bodies have been demonstrated, believed by some to be parasites, having some causal relation to the cell changes.

It is a well-established fact that the nucleus perpetuates the nature and function of the cell, and any change in the nucleus changes the cell in its function and process of division. According to W. V. Shaw, "the growth of cancer cells is then to be looked on as an effort of reproduction in damaged tissue, the incidence of the damage falling on the nuclear structures."*

This statement is based on observations made by him in connection with experiments on free swimming larvæ which developed from the stimulation of ova of certain lowly organized animals, causing a proliferation of cells. The ova had not been fertilized by spermatozoa. Adult organisms were not developed, but larvæ capable of independent life. These results were obtained by stimulating the ova with strychnia and by mechanical movements of the ova. This cell growth was compared to the growth of tissue in partially damaged structures. Shaw believes that such damage alters the nature of these cell structures so that the vegetative functions of the cell run riot and the cells become parasitic toward the organism in which the growth is taking place. This view seems to find support in those connective tissue growths that develop in tissues that have sustained a trauma and in which the sarcoma develops; or in epithelial growths that form on surfaces that have been subject to prolonged irritation, as exemplified by the chimney-sweep's and paraffin-worker's cancer forming on an old chronic dermatitis; or a cancer forming on the site of a prolonged irritation by the smoker's pipe-stem on the lower lip. We have seen many times that cancer develops in epithelial tissue that has been subjected to irritation for a long time, usually extending over a period of years. We have long recognized irritation to be at least one of the causative factors. Just what metabolic disturbances take place and what the underlying causes are, is not yet clear. That cancer is infectious has been proven by many clinical observations. This has beeen shown by Eberth, who collected 22 cases where cancer was transmitted from lip to lip, tongue and palate. Behla reported eight instances of death from malignant growths in physicians and surgeons who were inoculated from tumors and four instances of apparent human infection from cancerous animals, dog and hen. He also alludes to a cancer epidemic among the white mice in the Pathological Institute at Freiburg as evidence of the contagiousness of cancer (Hektoen). Roswell Park believes that, for New York State at least, cancer is increasing at an alarming rate.

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* The Lancet, Sept. 20, 1902.

Attempts have been made to show that cancer is endemic, peculiar to certain localities. Behla cites cases of Behrens, who found in a village ten deaths out of thirty eight to be due to cancer. Pfeiffer, Powers and Friesinger maintain that in certain houses (cancer houses) and marshy districts in the vicinity of ditches and streams containing sluggish water, especially if the stagnant and polluted water were used for watering garden vegetables and for drinking purposes, cancer is relatively frequent (Hektoen). This would point rather to a microphyte than to a microzoon as the etiologic factor.

Since infection of living tissue is believed in every instance to be due to bacterial invasion, naturally bacteriologists directed their attention toward the discovery of a specific germ. Very soon we had a long list to enumerate. Plimmer of London examined in six years 1,298 carcinomata, and in 1,130 he believed that he found parasitic bodies. Sjöbring laid much stress on cell inclusions. Russell described his fuchsin bodies, which were spherical or oval. L. Pfeiffer of Weimar published several monographs on the protozoa as a cause of cancer. Eisen brought out his *Cancri amœbæ*. Korotneff believed that he had found an organism which he termed *Rhopalocephalus carcinomatosus*. Bosr found and described an organism that he called *Myxosporidia coccidia*. Gaylord of Buffalo described at great length bodies that he believed bore an etiologic relation to cancer. Sanfelice of the University of Cagliara emphasized the etiologic importance of bodies that he named *Saccharomyces neoformans*. A very large number of other publications on this subject made their appearance, none of which differed in any essential point from those bodies just mentioned.

While the presence of the aforesaid bodies described by the different observers can be demonstrated and are present in a large proportion of the cases of cancer, all the requirements necessary to prove them to be organisms solely responsible for cancer have not been fulfilled. The requirements necessary are (1) the organism must be isolated; (2) a cancer must be produced when the organism is introduced into another body; (3) the organism must be recovered from the cancer produced. It has been shown that, while the first requirement has only apparently been fulfilled, the second has been, in a number of cases, seemingly produced. More careful investigations have proven that the experimental growths were not cancer. The third requirement has not been fulfilled.

All of the work mentioned above was carefully reviewed in all its details by the cancer committee, who, in their second annual report to the surgical department of the Harvard Medical School, showed conclusively that the bodies described by the various investigators under different names were not cancer nor the cause of cancer. I can do no better than to quote in full the results of their labors. They bear the marks of painstaking and conscientious work. The conclusions of the Harvard cancer committee were written by Edward H. Nichols and were as follows:

"It has been claimed by the adherents of the theory of the parasitic origin of cancer that

1. A proliferation of epithelial cells analogous to the lesions seen in cancerous tumors can be produced by certain well-known protozoa (nodules caused by the Coccidium oviforme).
2. Certain skin lesions characterized by epithelial cell proliferation are due to the action of a so-called protozoon (Molluscum contagiosum).
3. Blastomycetes are constantly present in human cancers and are the cause of the lesion.
4. By experimental inoculation of animals with blastomycetes, true epithelial or cancerous nodules can be produced.
5. Finally, the well-known endocellular bodies seen in the protoplasm of cancer cells have a definite morphology, are parasites and the cause of cancer.

It has been the object of the investigators, the results of whose work appear in the preceding pages, to study each of these questions. As a result of the lines of work pursued by them under the direction of the Cancer Commission during the past year, it is concluded that:

1. The lesion produced by the Coccidium oviforme is essentially a process of chronic inflammation and is not analogous to the lesion seen in cancer.
2. The lesion of Molluscum contagiosum is characterized by certain changes in the epidermis, is not due to the action of a protozoon and is not analogous to cancer.
3. The so-called 'blastomycetes' (saccharomycetes) of Sanfelice and Plimmer are torulæ.
4. The lesions produced by these 'blastomycetes (torulæ) are, essentially. nodules of peculiar granulation tissue, are not cancerous, nor, in any sense, true tumors.
5. Blastomycetes are not constantly present in human cancers.
6. The peculiar bodies seen in the protoplasm of a cancer cell are not parasites, nor the cause of the lesion, but probably are, in part at least, atypical stages of the process of secretion by glandular epithelium."

It is clear that in the present status of the etiology of cancer, bacteriologically considered, the case has not been proven. But it does not follow that it will not be shown that cancer is due to a specific and well-defined organism. It may be an organism so minute as not to have been brought within range of the microscope. It is possible that no stains have yet been found that possess the requisite affinity for its complex molecular constitution. The necessary artificial medium for its cultivation remains for some future investigator to solve. Be it what it may, since the clinical features give strong evidence of the infectiousness of cancer, the search must and will be continued along the same lines.

In this search for a specific contagium, cellular metabolism must not be forgotten. Its consideration and study is perhaps more important than the isolation of a specific germ. It can not be denied that the more exact our knowledge of cytomorphosis becomes the clearer will be our understanding of cell proliferation. It has long been understood that there must be certain stimuli that cause cell growth and certain inhibitors that limit cell development and exercise control in accordance with the requirements of the tissues. Certain other influences bring about a disturbance of the normal equilibrium between the stimuli and the inhibitors. It is evident that the exact nature of the stimuli, the inhibitors, and the disturbers must be ascertained. This involves a study of the cell constituents and the fluids that surround it. As we see, it is a question of chemistry.

In this connection, it is important to take note of a very novel hypothesis bearing on the formation of new growths propounded by Homer Wakefield.

He believes that a neoplastic formation is not an exaggeration of anabolism, increased or excessive proliferation, but that it is a product of katabolic stasis; that is, normal cell division is unimpaired, the anabolic process continuing to the point of maturity of the cell. It attains the meridian in its life and reaches the postmeridian state when it should undergo normal katabolism, a complete dissolution and disappearance of the cell. Instead, something has supervened to check katabolic changes, the cell becomes superannuated and its existence is prolonged until finally it undergoes various degenerative changes. Normal cell production continues, but normal cell dissolution is retarded or abolished, hence the cells accumulate, producing the appearance of what is regarded as cell proliferation.

This condition Wakefield has termed katabolic stasis or subkatabolism. He states that the intercellular substance is richly alkaline and that the tissue cells are more or less soluble in it. The cells, during the period of their growth, generate sarcolactic acid and during this period they are richest in protoplasm. After the meridian the cells offer decreased resistance to the solvent powders of the alkaline medium and lose their protoplasm, the nucleus alone remaining.

He infers that, before the meridian is reached, the acidity produced by normal cellular activity protects the cells by it's neutralizing effects on the intercellular alkalies and, that this preserves the investment of protoplasm. Now, if from any cause, the normal alkalescence of the intercellular substance is reduced or if, in a given area, the acidity increases, katabolic stasis affects all the cells in that area. Suboxidation consequently takes place. It is therefore believed that cancer formation is an acid process.

Briefly, tumor formation, according to this hypothesis, rests on a stasis of katabolism, subkatabolism and suboxidation, in the presence of normal anabolism. The cell inclusions, observed by many investigators and regarded by them as protozoa, cancer parasites and as blastomycetes, Wakefield regards as products of disturbed nuclear division. This new hypothesis, at present, rests only on theoretical grounds, but the arguments are so thoughtful and so suggestive that they deserve careful attention. Their chief importance, at this time, consists in the bearing out and support of the methods of research along chemical lines.

We are all familiar with Virchow and the birth of cellular pathology, with Ehrenburg and the growth of bacteriology, and now we have arrived at, and are in, the humoral or chemical era. The trend of all research at the present time is beyond cells and beyond bacteria. It is to determine the chemical operations in and around the cells. This line of research began in the leucocytes because they were the most available. In their study it was possible to establish basic principles. From the leucocytes to the erythrocytes was only a step and then the epithelial and connective tissue cells received attention. This field of research is a new one. It is occupied by a vast army of patient and earnest toilers. The fruits of their labors will be beyond our greatest expectations. It is our present purpose to see if the cancer problem can be solved along these lines.

What has malignant disease to do with immunity? The entire subject of immunity has to do with infection. It has to do with its nature, mode of action and control. Has cancer any characteristics that pertain to infection? Bacteriologically we have found none. Clinically we have a mass of evidence that would seem to place cancer among the infectious diseases.

In order to have a clear understanding of the modern conception of immunity it is necessary to review as briefly as possible and in the barest outlines without comment the most important features of our present knowledge of the subject. Much material that may seem essential to a complete elucidation of this great and important subject, had to be eliminated on account of the limited scope of this dissertation.

More than a century ago we find that John Hunter was familiar with some antiseptic properties of the blood. He found that a small amount of putrefying material could be added to a given quantity of fresh blood without producing putrefaction. Consequently, he advanced his doctrine of "the living principle of the blood." This, as an observation, was almost forgotten and its import was not fully realized until Nuttall, in 1888, began his systematic work in Flugge's laboratory, studying the antibacterial properties of the body fluids, especially the blood serum.

The greatest impetus to the study of immunity was given by Metschnikoff in calling attention to the participation of the leucocytes and other cells in the process of infection, establishing his well-known theory of phagocytosis. His views are so well understood that we need only to call attention to them at this time.

Following Nuttall, Pfeiffer discovered, in 1894, "the extracellular disintegration and solution of cholera spirilla in the peritoneal cavity of immunized guinea-pigs."

The greatest attention and interest was aroused by Behring's great discovery of antitoxic immunity. Bacteriologists at once endeavored to elucidate by elaborate researches the exact way in which immunity was established. Chief among these was Ehrlich. It was soon shown, however, that immunity in most bacterial infections did not depend, in the main, on the antitoxic principle.

Pfeiffer's phenomenon afforded a starting point from which Metschnikoff, Bordet, Ehrlich and Morgenroth began their labors and brought forth a series of discoveries that have been epoch making.

A series of antibodies were differentiated and classified as antitoxins, antienzymes, cytotoxins, agglutinins, precipitins and coagulins. Antibodies were in turn produced by these, with the exception of the antitoxins.

It was determined that to every cellular group of an animal species there appears to correspond a specific cytotoxin. These various toxins have been termed leucotoxin, neurotoxin, spermotoxin, nephrotoxin, thyrotoxin, etc.

These antibodies have been divided into two groups, first, the antitoxins which are single bodies; second, the cytolysins, whose antagonistic effects require the cooperation of two bodies.

Of these two bodies, the one which actually destroys the foreign cells is normally present in the cells or fluid of the organism, but it seems incapable of action without the intermediation of a body which is distinguished from it by a greater resistance to heat. The two elements composing cytolysins exist quite independently of each other so that one may be present without the other or be artificially removed without affecting the other.

To demonstrate the mode of action and constitution of the specfic antibodies, Ehrlich has propounded the theory of receptors or side-chains. The atomic grouping of the toxin molecule, which affects the union with antitoxin as well as with a particular cell, he has designated as haptophore groups.

In view of the fact that certain molecule groups of the living protoplasm favor the taking up of certain poisons, he has termed them receptors. According to his theory of antitoxic formation; after the introduction of toxins, the receptors are produced in excess and finally are thrown into the blood as useless ballast. The free circulating receptors are the antitoxins, termed amboceptors, intermediary bodies. The action of antitoxins is explained thus. They take charge of the haptophore groups of the toxin molecules and prevent them from approaching the receptors of the tissue.* There are as many receptors as there are toxins, while almost every day new ones are discovered.

Behring gives the most exact and brief definition of Ehrlich's antitoxin theory: "The same substance, which, when incorporated in the cells of the living body, is the pre-requisite and condition for an intoxication, becomes the means of cure when it exists in the circulating blood." Every antiserum protects only against substances through which it becomes immunized. Every antiamboceptor protects only against its particular amboceptor.

Ehrlich and Morgenroth found, in experiments with goat's blood, thirteen different new lysins which represent so many receptors. "The receptors are in the cells, not for the purpose of linking poisons to the cells, but to seize certain foodstuffs, particularly proteids, and the toxins, bacterial and other foreign cellular substances, if capable of inducing the immunizing reaction, chance to have the requisite combining affinities for the receptors."

The living body possesses bactericidal and cytolytic substances which may protect it by destruction of invaders or may injure it by destruction of its own cells, according to the mates with which they are paired.

In considering the physiological mechanism of the cells we find that they are designed, primarily, for the assimilation of food, and secondarily, to meet pathologic conditions, the production of antitoxins, cytolysins and other similar bodies. The receptors are in the cells for the purpose of taking up foodstuffs, chiefly, proteids. The toxins and bacterial cellular substances have combining affinities for the food receptors, if they are capable of inducing an immunizing reaction.

In producing immunization against bacteria, it is the intermediary body (amboceptor) which is generated. It has been found that these antibodies have a specific relation to the substances which caused their formation, as has been shown by the injection of a specific serum into an animal at certain intervals, of toxins, against which an antitoxin is desired.

The specific nature of these antibodies is further shown in their application to serum diagnosis, as shown by the Widal agglutination test for typhoid fever and the serum test in the diagnosis of bacillus dysenteriæ Shiga, an organism shown to be the cause of acute dysenteries by Flexner, Vedder and Duval.

When Roux and Yersin discovered diphtheria antitoxin and Ehrlich the origin and mode of action of antitoxin, a lasting foundation for the study of immunity was laid. It was positively shown that "soluble toxins enter, as assimilable substances, into combination with constituents of the body cells for which they have an affinity," and are enabled to produce immunity or to exert toxic effects.

The expectations that we should soon be enabled to solve all questions regarding the action of toxins after the discovery of soluble bacterial toxins, have only partly been realized, especially regarding the action of the pyogenic micrococci, which concerns us most as surgeons.

However fruitless, hitherto, the practical results regarding toxins of many pathogenic and especially pyogenic organisms, the principle has been established, and it is only a question of method and time when all body toxins and their antitoxins shall be definitely known.

Pfeiffer directed his attention to the bacteria and found substances, toxins, in cholera spirilla, which became free only after the bacteria were dead and which were termed intracellular poisons. This was a most important step in advance, but we must acknowledge that we know as yet very little about the action and nature of intracellular bacterial poisons.

It is interesting to note from the result of Flexner's experiments with venom that their action on red blood corpuscles, leucocytes and nerve cells is like that of duplex cytotoxins, which depend on the combination of intermediary bodies contained in the venom on one hand, with corresponding complements in the cells or fluids acted on. This is shown by the addition of venoms to fresh blood, which brings about the quick destruction of the red blood corpuscles. If the fresh blood has been washed with an isotonic salt solution, so as to remove all the complement, we find that the corpuscles are not dissolved, but agglutinated. It seems that the venom serves chiefly to bring "into necessary relations with constituents of the body cells, poisons we already harbor or may generate, but which are harmless without the intervention of intermediary bodies."

Flexner and Nogouchi have shown that the leucotoxic, the neurotoxic and other cytotoxic properties of venom depend on combinations of venom, intermediary bodies with complements contained in the cells poisoned by venom, or in the fluids bathing these cells, indicating that the snake venom contains only a part of the complete poison.

Flexner and Nogouchi also demonstrated that hemorrhages in various tissues of the body resulting from poisoning from certain venoms is due to the presence in venom of a cytotoxin which has the power to dissolve endothelial cells, which they termed endotheliolysin (hemorrhagin). It causes extravasation of blood through its direct solvent action on capillary endothelium.

The hemolysins have been most extensively studied because of their great pathologic significance, and it has been found that many bacteria have hemolytic power. The secondary anemias, so constant in streptococcus infections, in pneumonia, typhoid fever and other diseases, afford a most striking example.

Normal blood serum contains antihemolysins which protect red blood cells from bacterial hemolytic agents. Associated with hemolysins are bacterial hemagglutinins, possessing the power to clump red corpuscles.*

Heuter and Klebs believed that thrombi were due to the coalescing of red blood corpuscles. Welch calls attention to hyaline thrombi formed by agglutinated red corpuscles. White corpuscles are agglutinated by certain bacteria and also by pus cells.

What is urgently needed is a separation of these poisons and a determination of their source, constitution, mode of action and degree of specificity.

It will not be out of place here to allude to the studies made of the ductless glands, because of their supposed bearing on immunity. Sajous urges that the adrenal extractives have a decided affinity for oxygen, offering a key to tissue respiration and to the functions of all other organs now classed as the ductless glands. It has been found that the red corpuscles are not the only carriers of oxygen, but that the blood plasma contains and distributes this gas. Schmiedeburg, Jacquet, Claud Bernard and others demonstrated the existence of an oxidation ferment in the plasma, and these bodies are now entertained as an oxygen-laden secretion. This secretion is believed to permeate nearly all the body elements. The blood also contains a fibrinogen body which combines in certain quantities with fixed portions of the plasma's oxygen. The changes in the temperature of the blood were traced to variations in the amount of the fibrinogen in the plasma. The adrenals have been shown to be connected with the anterior pituitary body by various sympathetic ganglia. The anterior pituitary body is regarded as the governing center of the adrenal system. Overactivity of this body increases the adrenal secretion, consequently oxidation, therefore vital resistance. Depression of the activity of the pituitary body causes decreased supply of oxygen, consequently depressed vital processes.

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* Ehrlich: Schlussfolgerungen, p. 176.

* Heuter-Klebs, p. 731.

The thyroid secretion, thyreoidin, has been shown to sustain the efficiency of the pituitary body. Excessive thyreoidin production stimulates the pituitary body and produces exophthalmic goiter. Deficient thyreoidin production leads to myxedema. The adrenals, the pituitary body and the thyroid gland constitute the adrenalin system. According to this line of research, it is believed that toxins act directly on the adrenal system, and, by decreasing or increasing its secretion, decrease or increase the oxidation process. Certain toxalbumins and many drugs stimulate the adrenal secretory powers to a certain limit, and, when exhibited in excessive doses, depress or arrest the functions of this system.

The posterior pituitary body has been shown by Berkley, Andriezen and others to be the chief functional center of the nervous system. It is the center for such emotions as shock, excitement, etc. It governs all organic functions through the nervous system. The secretions of the pancreas and spleen according to Schiff, and later by Herzen, unite and change trypsinogen into trypsin, a solvent for the albuminous bodies in the pancreatic juice. This ferment performs an important part in immunizing processes, in that it destroys toxalbumins.

Viewing these labors in the light of Ehrlich's researches, the oxidizing substance represents the amboceptor; the splenopancreatic internal secretion, trypsin, represents his complement. To produce a proteolytic action of trypsin, fibrogen and the oxidizing substances are required. These views are somewhat at variance with those commonly accepted, but are of sufficient importance to deserve consideration in this connection.

From the foregoing it would seem that the doctrine of phagocytosis plays an unimportant rôle. But we find that the French, or phagocytic school, at head of which is Metschnikoff, recognizes the full significance of acquired immunity and the cytolytic principles represented by the co-operative action of intermediary bodies and complements. The German, or humoral school, led by Ehrlich, recognizes the leucocytes to the fullest extent.

The chief difference between the French and the German schools consists in the belief by the advocates of phagocytosis, that the complements reside in the leucocytes, whereas the adherents of the humoral school believe that they exist in the blood plasma.

While, in what has here preceded, we have been concerned in the consideration of chemical problems, we must not overlook the fact that behind all is a governing force which resides in the central nervous system.

The practical outcome of these studies has been found in the production of antitoxic sera, some of which have been proven to have a definite and exact effect under certain conditions. We find these sera divided into two principal groups, (1) those that have an anti-bacterial action, and (2) those that have a purely antitoxic action. Of all the sera the diphtheritic is best known. According to Welch the mortality of diphtheria has been reduced from 40 per cent. to 15 per cent. by its use.

Antitetanus serum has been disappointing. Reports coming to us from different sources are conflicting. the mortality ranging from 0 per cent. to 70 per cent. from practically the same methods, which consist in administering the serum by the subcutaneous, intracerebral and the spinal methods. Antityphoid serum has failed to fulfill expectations even more than antitetanus serum. The antistreptococcus serum of Marmorek, while it seems to have exerted a specific effect in purely streptococcic infections, appears to exert no influence in the presence of mixed infections. The antipneumococcic serum has not yet emerged from the experimental stage. Nothing can be said of its effects. The anti-plague sera of Haffkine and Yersin demonstrated that, as a preventive, it reduced the number of cases to one-twentieth and the mortality in a given number of cases was reduced from 33 per cent. to 13 per cent. (Calmette). The antitubercle serum has been shown to have a specific effect on tuberculous tissue, but remains powerless in the presence of mixed infections. The antivenom serum has been demonstrated to have a positive usefulness in certain snake bites. Calmette's antivenin has been proven to be of undoubted use in leprosy.*

Many other sera have been described, but their usefulness thus far has been shown to be of an uncertain nature. Consequently, we will leave them out of consideration at this time.

When we pass in review all that is positively known in relation to the question of immunity, we can not deny that some of the principles underlying this great question have, in a measure at least, been revealed. The evidence is conclusive that "the same substance which, when incorporated in the cells of the living body, is the pre-requisite and condition for an intoxication, becomes the means of cure when it exists in the circulating fluid."†

Ehrlich, in his investigations of diphtheria toxins, demonstrated "that soluble toxins enter as assimilable substances into direct combination with constituents of the body cells for which they have an affinity, and only thereby are enabled to bring about immunity or to exert toxic effects." Further, in connection with Metschnikoff, Bordet, Morgenroth and Ehrlich, it is shown that "the organism possesses a power to produce substances specifically antagonistic to all sorts of foreign cells, cellular products and derivatives. The substances capable of inducing this immunizing reaction appears to be mainly of an assimilable, albuminous nature, or at least intimately associated with such material."

The principle of toxins and antitoxins has become as firmly established as any other in medicine or surgery. We have noted that antitoxins from pure cultures have a certain affinity for and possess immunizing power in specific infections, but fail in the presence of mixed infections. We see at once that failure to immunize does not violate the principle, but that the method of application has been at fault. We know that diphtheria toxin has a specific effect for the products of the Klebs-Loeffler bacillus, and that it controls and cures in the presence of these, but fails when there is an admixture of other forms of infection. This is shown by the 15 per cent. mortality which still exists. We have noted that antistreptococcus, tubercular and plague sera have a specific and a decided effect in pure infections, but that they fail in the presence of other specific germs. We observe with satisfaction the certainty of the action of a given antitoxin in its union with the toxin from which it was produced. It at once becomes apparent that, in the presence of several toxins or a mixed infection, it will require several antitoxic substances, a combination of antitoxic sera, or a serum containing different kinds of amboceptors, so combined as to meet and unite with the several toxins in a given case. Coley endeavored to meet such indications by combining streptococcus and bacillus prodigiosus sera in treating inoperable sarcoma.

These observations presage a revolution in therapeutics, which perforce means a refinement in diagnosis, beside which, what we do now will scarcely bear comparison.

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* F. A. Packard and Robert M. Wilson: American Journal of the Medical Sciences, December, 1900.

† Behring's Definition of Ehrlich's Theory Concerning Antitoxin. Welch.

The inferences to be drawn from the foregoing indicate that the future work will be biochemic. It appears that the solution of cell metamorphosis, as it is observed in pathologic conditions, will be in the field of chemistry. Ehrlich's theory of the side-chains has given us a working hypothesis almost as practical as the atomic theory when applied to chemistry. It is not an idle dream to believe that the revelations of the future will not only consist in a complete exposition of cells and body fluids, or a perfect understanding of the governing brain centers, but may extend to the life principle itself, although life itself may and will ever belong to the unknowable.

Our chief interest, however, will always center in the cell and its governing influence. Just what influences are responsible for normal cell division may never be known. But it is within the bounds of human possibility to know what influences may be responsible for atypical and excessive cell growth. Excessive cell growth, both in the leucocytes and connective tissue cells in acute infections, we can assume to be due to toxins that are in excess of the amboceptors. The existence of cytolysins and anticytolysins is now undisputed. The one destroys, the other protects the cells. We have noted that the chief function of a receptor molecule is to combine with nutrient molecules, a metabolic, a chemical process. The birth and growth of the cell is restricted within certain limitations and is regulated by chemical law. Now the problem depends on our ability to ascertain the exact influence that carries cell division beyond its normal bounds and causes excessive cell growth as we observe it in malignant new growths. That the process is one of localized excessive nutrition is apparent. The localities of predilection are frequently at points where the cellular elements are exposed to frequent insults, where the tissues are damaged, establishing a *locus minoris resistentiæ*, as, for example, in the mouth, gastrointestinal tract and the female reproductive organs. A point of least resistence, damaged tissue, if you please, always offers a soil for bacterial invasion. Cancer very often develops in tissues that have long been irritated, no doubt liberating a complement that unites with a specific infection when introduced under proper conditions. Such is not always the case, however. In fact, we know that in the majority of tissues that sustain irritations and almost constant traumatism for many years never become malignant. The simple traumatism does not develop cancer. A specific toxin must be introduced, probably also an intermediary body to complete the side-chain, which increases karyokinetic energy. We have noted in our studies of immunity that the life or death of the cell depends on its intra- and extracellular composition, so we may say that the whole process, whether it relates to normal or excessive cell growth, is chemical.

An objection may be urged at this point, which consists of the fact that the propositions of immunization thus far considered affect groups of cells extending over a wide range, *i.e.*, the vascular, the muscular and the glandular or cerebrospinal systems. It has been shown that cancer is always at the outset, and often throughout its entire course, absolutely a local disease. It would not seem rational to attempt immunization of the entire system against a strictly local disturbance. We will naturally turn our hope toward a method that will enable us to effect local immunization.

That local immunization is possible has been demonstrated by P. Römer in the following convincing abrin-immunization experiment. As is well known, abrin, which is the toxalbumin of the jequirity bean, will produce a severe conjunctivitis in animals and men. Ehrlich had demonstrated that rabbit's conjunctivæ became immune after the instillation of abrin. Römer instilled into the right eye of the rabbit weak abrin solutions, the dosage being rapidly increased until immunization was produced. In three weeks the rabbit was killed. It was then shown that if the right conjunctivæ, which had undergone severe inflammation, were rubbed and macerated with a certain amount of abrin and injected into a healthy animal, the injection had no effect. But, if the conjunctiva of the left eye, which had received no instillation, were rubbed and macerated with abrin and injected into an animal, death always followed. Römer concluded from this observation that in conjunctival immunizations a part of the antitoxin existed in the conjunctiva itself. A local antitoxin was produced.

It would seem that these results establish definitely the principle of local immunization in indifferent tissues. These observations have an important bearing on the adaptation of the cells in local affections. That local affections of various forms or general affections with local manifestations, can be best managed by the local introduction of exceedingly small doses of the specific remedy, was shown by Professor Bouchard before a recent meeting of the Egyptian Congress. He found that articular rheumatism disappeared after the injection *in situ* of small doses of salicylic acid, in some cases only half a grain. We must conclude that local cell metabolism can be influenced by local rather than by general diffusion. The inhibition of excessive cell growth must be accomplished in the same way.

It would seem, then, that the cancer question must be solved along the lines of chemistry. Since we know that contagious or infectious energy does not depend on the bacterium itself, but on its products, which are purely chemical, it would seem that it matters little whether the specific parasite is found or not. Since the cancer germ has thus far successfully eluded the most vigilant search it becomes more and more evident that in the field of chemistry will be found the solution for our problem.

It will be difficult to rid ourselves of time-honored views. Purely theoretical speculation, like the hypothesis of cell proliferation from inclusions of embryonal matrices according to Cohnheim, must give way to the demands of modern science that insist on actual observations and practical demonstrations.

Now then, will it be unreasonable to hope, that when protoplasmic changes are thoroughly understood and when the body sera have given up their secrets and the influences that govern cell growth, that we may also find the antibodies which will inhibit cell multiplication beyond natural bounds?

The studies in the field of immunity have, as yet, only assumed the proportions of the initiatory stage. A vast unexplored wilderness lies before us. The pioneers have begun their work well. They have outfitted themselves in a manner that will, in the near future, enable them to throw unexpected light in the pathway of their conquest of discovery. They are only on the verge of this vast domain. What lies beyond the borders we can no more foretell than could Boyer know that in twenty-four years after his death we should have anesthesia and that in fifty years the world would have antiseptic surgery. And yet, in the light of our present knowledge the hope, amounting to a conviction, arises in us that even in our lifetime, if we are spared a few years more, we will have an exact biodynamic and biochemic science that will make diagnosis accurate and precise and one that will enable us to treat and control all infections with an exactness not now possible. While the surgeon is now constantly encroaching on the field of the internist, the time is not far distant when the physician may not only reclaim his own, but with it that large group of neoplasms known as malignant growths that from time immemorial has been the exclusive property of the surgeon.

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## ORIGINAL ARTICLES.

# ON THE RESEMBLANCES OF MALIGNANT ENDOCARDITIS TO TYPHOID AND PARATYPHOID INFECTIONS.

BY HENRY L. ELSNER, M.D.,

OF SYRACUSE, N. Y.;

PROFESSOR OF MEDICINE, SYRACUSE UNIVERSITY MEDICAL COLLEGE.

In considering with you the subject of this paper, I am not unmindful of the voluminous literature which has accumulated on the infections of the endocardium during the past few years. I am prompted by my clinical and pathological experiences to call the attention of this Academy for the first time in its history to the resemblances which the disease bears to typhoid and paratyphoid infections. There are two facts which have impressed us. First,—the typhoid type of infectious malignant endocarditis has rarely been diagnosticated during the life of the patient by those with whom we have seen these cases and second,—the detection of the focus from which infection sprang has presented the greatest difficulties. At times it was impossible to reach a satisfactory conclusion. Experience proves the force of this statement and the truth of these facts. We must remember that we are dealing with infection which is probably secondary; that all cases are not always dependent upon the same pathogenic organism and that the true nature of the infection can, as a rule, be determined only by painstaking bacteriologic study and repeated hemanalyses. It is a question whether any other disease presents a richer development of bacteria in the blood. No primary infection is so mild that it may not ultimately give rise to grave and fatal endocarditis. In cases of the infection which are associated with a typhoid condition from the beginning, secondary endocarditis may stealthily develop without the change of a single original typhoid symptom. In some of these cases the physical signs referable to the heart are absent for a long time thus shading the diagnosis.

The malignant nature of the endocarditis often surprises us for in some cases the primary infection may remain unnoticed or may be so slight as to appear insignificant. In the endocarditis following profound infections one is impressed by the gravity of the primary disease and may be pardoned for failure to detect secondary and malignant disturbances.

In this paper I wish simply to draw deductions from recent clinical data gathered since the publication of my article in the *Jacobi Festschrift* in which I offered a classification of malignant endocarditis, based upon the symptomatology of this disease with which later experiences have made me thoroughly satisfied. Let us consider the following histories:

*Case I.*—Walter J. B., aged forty-one years, electrician, was admitted to St. Joseph's Hospital Nov. 10, 1902. His father died at a ripe old age; his mother is living and well; he has one brother and two sisters living; one sister dead, cause of death unknown. There is no history of tuberculosis, carcinoma, rheumatism, neither is there specific or hereditary taint. Has been a daily user of alcohol. His previous history shows that he had always enjoyed good health, until 14 years ago when he sustained a serious injury to the perineum; from this he never recovered, but was always more or less troubled with urinary symptoms. After ten years of dysuria and cystitis, he was first forced to use a catheter four years ago; this was used by a physician and was followed by severe chills and fever.

Following this initial use of the catheter, he was forced from time to time to resort to its use for relief at intervals of from three to six months. Catheterization was usually followed by chills and a high temperature. This patient had an abiding faith in the treatment of stricture, from which he suffered, by electricity and for that purpose he vacillated between two physicians who at various times during the past two years, treated him with galvanism. On Oct. 31, of the last year an instrument (16 French) was passed by a physician into the urethra, and an electrical treatment was given. The physician stated that he had previously introduced a much larger instrument. On withdrawing it, he found a number of "vegetations," as he called them, attached; in all probability the urethra was ruptured and a portion of mucous membrane was withdrawn with the instrument. Following this the patient had chills and fever; became desperately ill and fell into a typhoid condition with a low muttering delirium. When conscious he complained of pain in the region of the heart. During the early days of his sickness between Oct. 31 and his admission to the hospital, he had repeated chills. Physical examination showed considerable emaciation. His muscles were flabby; the skin over the malar eminences flushed. He was apathetic most of the time. On his body were a large number of hemorrhagic spots, varying in size from a pin point to a split pea. Physical examination of the heart showed moderate increase of cardiac dulness to the left, with a marked blowing, systolic murmur, loudest in the mitral area but heard over the entire mammary region. There were no marked physical signs referable to the lung. The liver was slightly enlarged, as was also the spleen. During his stay in the hospital his temperature ranged from 100.2° to 104.8° F.; his pulse was never below 100, usually between 120 and 130; his respirations were between 28 and 36. There was albuminuria. Urine analysis: specific gravity 1.015, considerable pus, bacteria and urates. There was a marked leucocytosis, the count showing 31,250 white corpuscles in each cm. of blood. A single examination of the blood on Nov. 12, made by Dr. Steensland proved sterile. This patient went deeper into the typhoid condition as the disease progressed; the abdomen became more distended; the pulse more rapid; the delirium more marked until finally, three days after admission to the hospital, he died. Unfortunately a post-mortem was denied, but there can be no doubt, when we consider the physical signs, the previous history of the patient, the evidences of embolic infarct and the result of the blood count, that the patient died of a typhoid type of malignant endocarditis. The chills verify the conclusion that during the early days of the infection he suffered from the pyemic form of the disease.

This case justifies many valuable deductions. The infection unquestionably came from the bladder and the urethra. The primary injury led to chronic cystitis, ultimate stricture; the treatment, with its associated injury to the urethra, in all probability, added an infecting agent and death finally resulted from a grafting upon the endocardium of a pathogenic germ causing vegetating malignant endocarditis, simply an expression of general sepsis.

The high leucocytic count, with the physical examination and chills was also a strong argument in favor of malignant endocardial infection and against the diagnosis of typhoid. Such infections following urethral disease and operation on the genito-urinary tract are not as rare as most clinicians have imagined; during the past few years I have seen this complication in four cases, all of them positive but fatal.

*Case II.*—D. B., aged thirteen years, was seen on Nov. 6, of last year in consultation with Dr. Price. Family history: father died of brain tumor; mother and one brother living and well; no history of specific or hereditary taint in collateral branches. The boy had always enjoyed splendid health, although he was never heavy; had grown very tall; had applied himself closely to his studies which probably accounted for his light weight. Dr. Price saw him first on Monday, Nov. 3, when he found the patient with moderate elevation of temperature after an initial and well-defined chill. Several weeks before he bruised the skin of his right heel, which for a few days gave him some discomfort. There was a small pustule over the middle of the right tendon Achilles, which had been dressed antiseptically by his mother and to which no great importance was attached. The doctor at his first visit thought the inguinal glands of the right side were slightly enlarged. From the time Dr. Price saw the case on Monday, until my visit Thursday evening, the symptoms were those of a true typhoid infection. Before my visit the Widal blood test was made with negative result. The temperature had ranged from 101° to 104° F. Pulse had been as high as 108; his respirations were somewhat accelerated. The blood count made on the previous day showed hemoglobin 95 per cent., red count 5,300,000, leucocytes 16,000. There had been no rose spots, no nose bleed, no diarrhea and so far as I know, no albuminuria. There was increasing delirium. The general appearance of the boy was that of a well-advanced typhoid. Apathy had preceded the delirium; the tongue was dry; the spleen was slightly enlarged; the area of cardiac dulness was but slightly changed; the impulse was feeble, 120 per minute at 10.30 P.M. There were in the mitral and aorta areas loud and distinct systolic blowing soft murmurs, the former transmitted to the left and posteriorly; the latter limited to the second interspace close to the sternum. A well-marked, hemorrhagic spot was noticed over the lower end of the right radius and a small linear petechia just above the umbilicus. He answered questions intelligently, when aroused, only to return to his delirium with at times active outbursts. A second Widal test gave as did the first only negative results. Enforced absence from the city during the next twenty-four hours prevented my seeing this patient again during his life. During the afternoon of Friday, he suddenly developed left hemiplegia and died Saturday morning in coma, with symptoms of brain pressure. During my absence Drs. Van Duyn and Price saw the patient and were scarcely able to hear the murmurs which during the preceding night were distinctly audible. The reasons for this material auscultatory change were clearly established by the history of the case after I saw the patient and the post mortem; to these I will refer again.

His history justified no other conclusion than that there had been associated with malignant endocarditis hemorrhagic infarct of the brain, involving the basal ganglia on the right side due to embolic detachment from the infected endocardium. The infection could only be traced to the insignificant injury to the heel. It may be assumed that the character of the mitral murmur was materially changed by the breaking away of vegetations after I saw the patient, which finally led to the brain infarct. This accounts for the difficulty which Drs. Van Duyn and Price found in clearly distinguishing the murmur. Another factor which succeeded in masking the physical signs referable to the endocardium was an increasing pericardial effusion. Change in the character of murmurs with their disappearence at times, as in this case, coincident with evidences of embolic infarct is quite characteristic of malignant endocarditis. The facts which justified the diagnosis of malignant endocarditis at the time of my visit were the decided initial chill; the history of injury and presence of the pustule, the positive leucocytosis; the negative Widal reaction; the petechiæ and finally the physical examination, with grave symptoms of infection. Later we received the report of the presence in the blood cultures of the *Staphylococcus pyogenes albus.*

The post mortem, made by Dr. Steensland, may be thus abstracted. Reference will be made to only abnormalities found, though the obduction was made with unusual precision and care. There were 100 c.c. of bloody fluid in the left pleural cavity. Pericardial cavity contained about 75 c.c. of slightly turbid fluid, holding a few white flakes in suspension. The heart showed the proximal surfaces of the mitral valve along its free margin covered with wart-like vegetations, the largest about 7 mm. in diameter. In the center of the proximal surface of each segment of the aortic valve were similar vegetations. There were evidences of hemorrhagic infarct on the surface of the left lung. The spleen was soft; the brain, the pia and arachnoid were smooth and translucent; vessels at the base normal; tissue in the lower part of right Sylvian fissure soft. Section by Virchow's method showed the red softening extended into basal ganglia. These changes were due to infarction of the brain. Bacterial contamination of the blood during life showed on culture *Staphylococcus pyogenes albus.* The same germ was found in the pericardium and left lung.

This case proves the truth of the statement previously made that no primary focus is so slight that it may not ultimately give rise to grave and fatal endocardial infection.

The following case is one which must impress us with the great resemblance which malignant endocarditis bears to typhoid and the difficulty of differentitiating these conditions by those who have failed to take advantage of many recently introduced refinements of diagnosis. In connection with these great difficulties the long duration (seven full months) of the final infection was striking, while the history shows the course of an acute endocardial infection grafted upon preceding chronic endocardial disease.

*Case III.*—On Sept. 9, 1901, I was called to see Henry S., aged fourteen years. Family history: father and mother living and well; one sister well; no hereditary taint. Patient was well until his fourth year, when he had some acute and transitory sickness and the attending physician discovered a marked mitral lesion. He grew, however, to be a strong boy; was never disturbed by his heart murmur or indisposition of any kind, until March 17, 1901, when he commenced to ail with all the symptoms of typhoid fever; a physician was called and diagnosticated typhoid. During the first four weeks of his sickness, his fever continued high and with the physician three consultants, who saw him, never doubted the diagnosis of typhoid; indeed no other diagnosis suggested itself, so clear did the symptoms appear to the attendants. During the period of continuous fever, which, as I have reported, continued over four weeks, the temperature often mounted to 105° F. During this time there was repeated nose-bleed, distended abdomen, delirium and an eruption which was quite general was mistaken for the roseola of typhoid. Close questioning proved this to have been petechial and similar to that which reappeared frequently during the last two months of the disease.

The history, which I received from the doctor and mother (who was also the nurse and an intelligent observer), shows that after the fourth week, the patient was not continuously in a typhoid condition, but developed an intermittent fever, with temperature running as high as 105° F., followed by great exhaustion, profuse sweats, always preceded by severe chills. These chills and fever were coincident with either positive evidences of cutaneous infarcts or more grave deposits in internal organs including at various times kidney, lung and spleen. After Sept. 9, when I saw the patient first, there was never a time when either subjective or objective symptoms failed to show the presence of fresh and repeated infarcts. Petechiæ were particularly abundant about the fingers and palms of both hands, both the physician in attendance and the mother confessed that during the early days the eruption always showed itself here and on the abdomen, while bloody urine frequently showed fresh infarct into the kidney substance. There never was a time when the urine was without evidence of chronic tubal nephritis in albuminuria and abundant casts,—granular, hyaline and fatty. The urea was always abnormally low.

During the months preceding September, when the typhoid symptoms were at their height, neither a Widal test or blood examination were made. After I saw the patient, during the five or six weeks preceding the fatal termination of this case, repeated blood examinations always showed marked anemia; the red blood corpuscles never above 2,125,000; hemoglobin between 28 and 42 per cent.; there was persistent leucocytosis from 21,000 to 31,250; polymorphonuclear increase. No culture of the blood was made. There were at no time evidences of retinal hemorrhage. Physical examination of the heart showed left border increased one-half inch beyond the mammary line and about one finger's breadth to the right of the sternal edge. On ausculation, a loud systolic murmur was audible over the precordium, loudest in the mitral area, with a somewhat softer systolic murmur in the aortic area transmitted upward toward the carotids.

The character of these murmurs never changed and they were always audible. The heart never beat slower than 120 per minute. The pulse was characteristic of mitral insufficiency. The aortic lesion never made its presence known by changing the pulse in any way. There were evidences in physical signs of hemorrhagic infarct from time to time in the lung and at times hemoptysis and edema of the lungs were coincident with the erratic chills and fever. Edema of the extremities, hydrothorax and puffiness of the face, were at all times present. The spleen was continuously enlarged. There was anorexia, muscular enfeeblement; mental hebetude alternating with hours of normal brain activity. Without marked change in physical signs, with repetition of irregular chills, petechial eruptions and the hemorrhagic infarcts, this boy, on Oct. 16, after severe convulsions, at first left-sided, involving arm and leg, also face, became hemiplegic and analgesic in these parts; Drs. Hawley and Larkin had charge of the patient at this time, owing to my absence from the city. He became comatose; his temperature reaching 106° F., the pulse became more and more irregular and erratic until he died on Oct. 17, exactly seven months from the inception of final infection.

The clinical diagnosis made ante mortem was primary chronic endocarditis, with mitral insufficiency, upon which an acute malignant endocarditis was grafted; chronic tubal nephritis, renal, pulmonary and splenic infarcts, with final cerebral infarct in the right internal capsule and surrounding brain tissue.

*Post Mortem.*—The important lesions may be epitomized as follows: Heart—There was marked hypertrophy of the left ventricle with some dilatation, the right half of the heart was also dilated and hypertrophied. There was about 30 c.c. of serum in the pericardium; about 200 c.c. of dark fluid in each pleural cavity. There were innumerable vegetations on the mitral and aortic valves; the free endocardium was covered in placques with prominent vegetations. There were evidences of ulcerative changes here and there in the endocardium and in the valve tissue. The right heart contained but few vegetations; the pulmonary cusps were uneven and covered with vegetations—not many. Lungs—There were evidences of old infarct in both lungs,—considerable hypostatic congestion. Kidneys—There was an old infarct in the substance of the right kidney, white and well organized. In the left kidney there were several recent infarcts of considerable size, comparatively speaking. Besides there were the usual anatomic changes of chronic tubal nephritis with capsule adherent. The spleen was enlarged and adherent to abdominal parietes, omentum, and stomach. There were a number of remnants of old infarcts, white with age as in the kidney, fully organized, while in the center there was a more recent clot about the size of a dove's egg. The organ appeared granular. The liver was pale, fatty, enlarged three fingers' breadth below the free border of the ribs. Brain—The dura mater was generally adherent; the surface veins were full and dilated. The sulci were closely adherent. The right internal capsule was soft, broken down, the seat of recent hemorrhagic infarct. In fact, the midbrain showed evidences of having been recently flooded and its substance was accordingly changed in color and consistence. In the left optic thalamus there was a recent hemorrhagic deposit the size of an ordinary chestnut.

Dr. Stensland's report, made October 19, 1901, showed that there was but one pathogenic organism at work in this case, and that, the pneumococcus of Fraenkel. This he found present in cultures made from the heart vegetations, the spleen and both kidneys. Strange to relate the brain clot was sterile. Had this alone been examined and depended upon the bacterial contamination would have been overlooked.

The histories of these cases are grouped for the purpose of demonstrating the fact that infectious endocarditis with original typhoid symptoms may be either fulminating or they may drag out a long and chronic course. These cases are exceptional. The one because of its rapidity; the other its chronicity. Both at one time presented a pure typhoid picture. In both the leucocytosis and petechiæ became prominent symptoms. In both there were hemorrhagic infarcts of vital organs. Both the acute and chronic cases terminated with almost the same cerebral symptoms, including hemiplegias, dependent upon large cerebral infarcts.

These cases are still further of great interest because they failed to show mixed infection. The acute case depended solely upon the streptococcus infection, while in the chronic the ravages were shown to be due to the *Micrococcus lanceolatus,* which we have learned to associate with pathologic processes distant from the organ which it selects by preference for its habitat, but in which it may cause no change while attacking vital organs, though the blood may teem with this specific germ life. In the acute case, there was no preceding endocarditis; if there had been it would have been detected by those who had previously examined the patient. The pneumococcus infection in the protracted case was grafted on valves, the seat of chronic change. Whenever I meet these cases, I am reminded of Goodhart's eloquent words: "Patients with chronic sclerotic valves are walking mushroom beds, in common times without spawn, but in periods of epidemics germs enter by various channels, which fertilize in these cases into ulcerative endocarditis; in others, to suppurative processes."

There were no pneumonic symptoms in the chronic case; never was there cough during the early days, nor sputum, save at times when toward the end of the disease there were both subjective and objective symptoms of pulmonary infarct. Endocarditis following or accompanying pneumonia is rather rare. Of 254 cases of pneumonia observed in the Tübingen Clinic (Henke, *Virchow's Archiv*, Bd. clxiii, No. 1), but one was observed to have endocarditis. Weichselbaum claims that in 33 cases of endocarditis examined bacterially, seven were due to the pneumococcus. Osler states that 25 per cent. of his cases of malignant endocarditis are due to the pneumococcus; Harbitz reports five in 43 cases. An argument against the assumption that pneumonia preceded the endocarditis or was coexistent, is the fact that at the post mortem the usual features of a complicating pneumococcus endocarditis were absent.

Endocarditis of pneumonia has special anatomic peculiarities. The right side of the heart is attacked with an unusual degree of frequency and the aortic valve more frequently than the mitral. Infarcts are rare. In my case these were numerous, finally becoming the cause of death. Endocarditis complicating pneumonia is sudden in its onset and rapid in its course. Its prognosis is not always bad. These facts prove that the history of the case reported does not correspond in any particular with that of non-malignant complicating or coincident endocarditis. The post mortem satisfactorily explains the cause of the repeated chills and the final departure of the clinical history from the usual typhoid type of the disease to the pyemic or intermittent. With each fresh infarct, whatever its size or location, there was the characteristic chill, fever and sweat. Why the duration of the malignant forms of endocarditis due to the same infectious agents are so widely variable in different cases, no clinician can fathom. Thus the writer has seen cases of gonococcus endocarditis which have ended fatally in a few days with typhoid symptoms; others which have commenced with pyemic symptoms merging finally into the typhoid condition bearing the closest subjective resemblances to typhoid, ending in two to three weeks, and finally cases in which the clinical histories covered several months before death claimed the victim.

The following case is here reported because it shows the difficulties experienced in differentiating malignant endocarditis, typhoid fever and malignant purpura hemorrhagica:

*Case IV.*—G. S., aged forty years, was admitted to St. Joseph's Hospital, November 1, 1902. He is a steel worker. Family history: father died at the age of sixty-eight; mother is living and well; one brother died of pneumonia; one brother and sister living, both well. There is no history of tuberculosis, carcinoma, specific disease or hemophilia. The patient has used tobacco and alcohol in excess. The history of this patient shows that during the two months preceding the onset of acute symptoms, he had not been properly fed; had grown anemic and an existing shortness of breath had been considerably increased. Close questioning made clear the fact that he had suffered in the past from repeated attacks of inflammatory rheumatism, the last of these in July, of the present year, when he was confined ten days.

The patient says that while at work on October 27 his nose bled for several minutes. During the following 48 hours he had a number of attacks of epistaxis, each hemorrhage more severe than any preceding. On October 29 the hemorrhage became alarming and he sought medical advice. Plugging of the nares by his attending physician failed to control the hemorrhage and at three o'clock on Saturday, November 1, he was admitted to the hospital with profuse bleeding from the left nostril. He was apathetic and ominously anemic. After he had been in the hospital a few hours, his temperature was 100° F., respiration 20 and pulse 84. During the night his apathy increased; his temperature almost touched 102° F. It was with the greatest difficulty that the epistaxis was controlled; in fact this hemorrhage was not finally controlled, in spite of repeated plugging of the nostril and the use of adrenalin, until November 8. During the time of profuse bleeding Dr. Halsted saw the patient; examined the nares with negative result. The doctor was impressed with the profound anemia, apathy and the profuse bleeding. He concluded that this patient must be suffering from some constitutional abnormality and, having failed to find nasal disturbance, on November 2 asked me to examine him with the object of determining the cause of the hemorrhage.

The subjective symptoms might have been taken for typhoid or some other grave infection. He was in a typhoid condition, profoundly anemic; abdomen was distended; mucous surfaces bleached; features pinched; his pulse was 112; respiration 24; temperature 101.8° F. He was disturbed by troublesome dreams and at times had more or less muttering delirium. His abdomen was covered with a large number of brown colored pigmented macules, between which could be seen a number of fine, small hemorrhagic spots; these purpuric spots were evenly distributed over the entire body. Physical examination revealed an increased area of cardiac dulness, reaching one inch to the left of the mammary line. The impulse was feeble.

There were mitral and aortic systolic murmurs. The mitral murmur was soft and blowing in character; the aortic systolic murmur was more distinct, coarser and transmitted upward to the right carotid.

On November 3 the patient's temperature reached 102.2° F.; respiration 24; pulse 100. The urine analysis on November 1, showed specific gravity 1.018, reaction acid; no albumin; no sugar. A second examination, on November 15, showed specific gravity 1.020; reaction acid; albumin. Microscopic examination showed urates, bacteria, pus but no casts. On November 5, the blood count showed 1,100,000 red corpuscles in each cm.; leucocytes, 9,100; hemoglobin, 20 per cent. With the profound anemia therefore there was a relative increase of leucocytes which was quite suggestive, when taken in connection with the symptoms of infection. Blood cultures made by Doctor Steensland on November 3 and 8 proved to be sterile.

On November 15, one week after the hemorrhage was finally controlled, there were no fresh purpuric spots, the blood count showed 2,122,,000 reds; 7,000 whites, in each cm. of the blood, and hemoglobin 32 per cent. From November 1 to 8 this patient was desperately ill.

The interesting features in this case, are the hemorrhages, the petechiæ, the early febrile movement; the marked anemia, in positive physical signs with the typhoid condition. The differential diagnosis needed to be made between malignant endocarditis, atypical typhoid and malignant purpura. We were positive of the fact that the patient had endocarditis. The question which was of transcendent importance was whether we were dealing with a fresh malignant endocarditis, a malignant endocarditis grafted upon a chronic lesion of the endocardium, or whether there was an unchanged chronic endocarditis which bore no relation whatever to the acute disease from which this patient was suffering. Against the assumption that we were dealing with malignant endocarditis was the preceding anemia without fever, the history of malnutrition; the profuse hemorrhage, the remnants of old cutaneous hemorrhage and recent ecchymoses, the absence of bacterial contamination of the blood as proved by culture experiments; the enormous and sudden increase of anemia; with a history of preceding rheumatism, which might account for the changes in the endocardium of a chronic character.

Clinical experience, including (comparatively speaking) a considerable number of cases of malignant endocarditis, has convinced me that such profuse hemorrhage is unusual in this disease. The negative Widal test, the sterile blood cultures; the enormous hemorrhage from the nose, the petechiæ, covering almost the entire body; the absence of rose-spots; the enormous relative leucocytosis with the anemia, and the absence of splenic enlargement, argued against the assumption that the patient was suffering from typhoid fever.

The subsequent history of the case has proved conclusively that we were dealing with a malignant type of purpura hemorrhagica in a patient who had a non-malignant endocarditis which followed repeated attacks of rheumatism. The patient has recovered fully from the purpura hemorrhagica; the physical signs remain practically unchanged, though the aortic murmur is less distinct than it was during the period of greatest anemia, the mitral systolic murmur remains as before. The blood count, made December 8, showed red corpuscles, 4,100,000; white corpuscles, 9,900; hemoglobin, 62 per cent.

A similar case reported by the writer in his article on malignant endocarditis, which appeared in the *Jacobi Festschrift*, in which a girl of fifteen years of age, who had been sick between two and three weeks, had a continuous fever without intermission, was supposed to be suffering from typhoid. About the tenth day of the disease she had profuse intestinal hemorrhage, more or less distention of the abdomen, slight enlargement of the spleen, a very rapid pulse, grave anemia with great prostration. She had a copious intestinal hemorrhage the evening I saw her. The heart was rapid; the sounds muffled and indistinct. The suspicion of endocarditis was at once considered. It was found that there was a far-reaching purpuric eruption. The spots varied in size from a pin-point to a split pea. The mind was clear, the pupils dilated, there was no evidence of retinal hemorrhage.

Typhoid fever, malignant purpura and malignant endocarditis were considered. Widal reaction was negative. The blood count showed the red corpuscles reduced one-half; the whites relatively decreased, diazo-reaction negative. In the course of a few days there were hemorrhages from the buccal mucosa. The mind remained clear; the pulse was persistently rapid; the heart sounds less muffled than before without adventitious sounds. The diagnosis of typhoid fever was eliminated, but to differentiate between malignant endocarditis and malignant purpura required two weeks. The patient made a tardy recovery with a normal heart after a long convalescence, which fact convinced us that she had malignant typhoid purpura, which Hoffman has described so fully and well.

The marked anemia early and the secondary anemia after hemorrhage, became important factors in diagnosis. In some cases of malignant endocarditis, especially those covering considerable time, the anemia is much less marked than in malignant purpura, with typhoid symptoms. There may be four million erythrocytes. In the markedly septic cases with typhoid symptoms the anemia becomes severe, not often so great as in the case of malignant purpura reported, while in the typhoid and septic form of malignant endocarditis, the red cells are often degenerated; a condition which is easily recognized even in dry specimens. The careful and repeated study of the blood became an important factor in the very difficult differentiation of the case just reported.

Our minds have been actively stimulated of late to consider clinical pictures, which we have learned to group under the head of paratyphoid infections. Recent events have given to the Widal test greater importance than ever before. Under the head of paratyphoid, Brill and Meltzer described the acute infections where all the signs and symptoms of typhoid were present but with negative Widal. In this country Gwyn reported the first case. In Germany many acute observers have decided that the intermediate group of bacilli cause pathological changes, not necessarily fatal, but resembling typhoid so closely that they are differentiated with the greatest difficulty. Such cases we have seen in hospital and private practice; they offer a clue to many fevers which were formerly grouped under the head of "Continued Fever," for now by the aid of bacteriological examination of these cases, the absence of the Widal test, we are enabled to give such infections their positive significance.

It would be foreign to my subject to consider with you the morphological and cultural peculiarities of paratyphoid bacilli. They resemble typhoid more than the colon bacillus, as they do not ferment milk. They differ from the typhoid bacillus by their ability to ferment glucose and to produce alkali in the culture media. This question has received considerable attention at our hands, and in the near future I shall have the data, founded upon scientific bacteriological examination, to give you. At this time I can only say that because of the fact that these paracolon infections are associated with typhoid symptoms, the resemblances between them and malignant endocarditis are striking and offer to the unsuspecting many obstacles to positive early differentiation.

The typhoid types of malignant endocarditis are particularly likely to be mistaken for paratyphoid or paracolon infection. Indeed, repeated blood examinations, with negative Widal tests; the differential count of leucocytes and the daily search for petechiæ and hemorrhagic infarct must finally lead to correct diagnosis. One case which I have interpreted as belonging to this group might readily have been mistaken for malignant endocarditis had I not known of previously existing endocarditis. There were all the symptoms of typhoid, continued fever, a mitral systolic murmur, negative Widal tests; absence of leucocytosis with negative diazo reaction. Recovery followed after six weeks of unquestioned paratyphoid infection.

The writer has been frequently asked whether cases of malignant endocarditis ever offer a favorable prognosis. When patients have recovered, I have concluded that the diagnosis of non-malignant endocarditis only was justified. It is safe to conclude that malignant endocarditis is almost always fatal. I understand very well that Herrick and others have reported a series of recoveries. Some of these cases have been treated with the soluble silver salts. I wish my clinical experience might lead me to other conclusions than those which I have reached. Only once in my experience have I seen a patient recover in whom I had diagnosticated malignant endocarditis, whose blood was positively found to be bacterially contaminated with gonococci. This was in the case of a young man twenty-five years of age. Dr. Kieffer made blood cultures with positive results. The case merged from the typhoid type into the pyemic and after two months made a full recovery without serious permanent damage to the valves, though there were positive evidences in murmurs, of far-reaching change.

In connection with this subject one fact must exert a controlling influence in diagnosis: It is the positive rarity of endocarditis as a complication of typhoid fever. If the pathological records of large hospitals and private practice are studied, this truth will be received without hesitation. Considered collectively, typhoid shows a surprisingly infinitesimal number of permanent heart lesions during the acute febrile period, or following. Hence with evidences of endocarditis and the typhoid condition, we are justified in assuming that the disease is not typhoid fever.

This knowledge must serve as a fundamental principle in the recognition of the disease under consideration. In the presence of murmurs with infection, the presence of petechiæ, disturbed circulation, infarcts and leucocytosis, negative Widal, we may strongly suspect malignant endocarditis. *To make the diagnosis positive ante mortem, we must have the presence of physical signs referable to the heart, and these we have in the majority of our cases before death.* Do not forget, however, that the endocardium may be plastered with vegetations without giving rise to physical signs. The presence of embolic infarct is a valuable diagnostic fact; it means much.

In another article I made the following statement, which I repeat with renewed confidence. "It matters not how few evidences of embolic infarct we have, *if we have any,* and these are associated with limited cardiac changes and the presence of few general symptoms, we must suspect the possibility of malignant endocarditis. The importance of these embolic processes, each a source of infection and producer of symptoms was demonstrated years ago by Virchow in his original study of embolism and pathological researches have since accentuated their importance."

The aid which I have received from the recognition of hemorrhagic infarcts, including retinal hemorrhages, in various cases would give material for another paper. Watch carefully and you will find evidences of embolic infarct in almost all cases. Transitory, or even lasting paralyses in the midst of acute general infections are exceptional, save in those processes associated with embolic detachment and consecutive tissue change. In malignant endocarditis these are frequent. Certain it is that these do not complicate typhoid, or appear at the height of the febrile period. Detachment of vegetations and other factors in malignant endocarditis are prone to cause changes in physical signs, hence the mutability of murmurs and changes in their character. The right heart in these cases is involved out of all proportion to the left-sided disease in less malignant or other forms of secondary endocarditis. Let us bear this in mind, for it will frequently add a link of positive value. Obstructive murmurs are frequently materially modified. Chronicity is no argument against the diagnosis of malignant endocarditis. Case III proves the truth of this statement.

In considering the cases reported it must not be forgotten that the change from one type of the disease to another is quite usual. The typhoid type may either precede or follow conditions which give the infection for a time distinctive features.

Symptoms of typhoid fever continuing during several weeks *without chills,* with more or less looseness of the bowels, enlargement of the spleen, increasing anemia, slight albuminuria, mental torpor, no paralyses and no marked physical symptoms referable to the heart become puzzling. Such cases we have noted. The negative Widal test, the leucocytic count, the final evidences of heart involvement and in most cases late erratic chills will be sufficient to clear the diagnosis. The diagnosis of typhoid fever must be surrendered if the patient has repeated chills. You may safely exclude typhoid, if with a chill there is leucocytosis and symptoms of infection. *If the disease were primarily typhoid we may be sure of secondary infection if chills persist.*

Chills, in the course of acute disease, are always suggestive and demand an examination of the heart and parts of the body which are often the seat of embolic infarct or pus deposit. In Central New York the cases of typhoid fever with well marked chills are exceedingly rare. The association of typhoid and malignant endocarditis has been so rarely found that chills in the course of typhoid are not suggestive of this complication. Malignant endocarditis has less morning remission of the temperature than has typhoid fever. The pulse is more rapid, softer, has less character and is more likely to intermit and become irregular and arythmic. There is as a rule no appreciable prodromal period in malignant endocarditis. Myocardial changes with associated symptoms have been demonstrated in the majority of cases of acute ulcerative endocarditis.

Finally, I wish to say a few words concerning blood examination. Leucocytosis with polymorphonuclear increase must always remain a strong link in the chain of evidence. The statement which I am about to make may appear dogmatic, but it cannot be justly controverted. *It is the duty of the physician in all cases of infection to make examinations of the blood sufficient to give him a clear idea of its condition.* It is as important as is the examination of the heart and lungs and if systematically followed, will give evidences upon which may be founded many positive conclusions. *We do not depend on the blood count alone.* Experience teaches us to interpret without overestimating its value.

The specific germ found in the blood by culture experiment must of necessity give decided evidence in many cases of the port of entry of the germ causing secondary infection. *Repeated* negative results of cultures of the blood make the presence of malignant endocarditis unlikely. A positive result with associated subjective and objective symptoms often makes diagnosis positive. It must be remembered that while leucocytosis is present in all cases of malignant endocarditis it may be intermittent and a single observation may fail to disclose it. Cases which run a rapid course, ending fatally in a few days or weeks, are the more likely to give positive evidence on culture experiments than are those cases which are chronic.

It would be a mistake then to hold that repeated negative cultures are sufficient to exclude ulcerative endocarditis. Kuhnau has said: "The difference between simple ulcerative and malignant endocarditis is one of degree, not of kind and in many cases of subacute or malignant ulcerative endocarditis of bacterial origin, the blood is sterile." Many may claim that blood examinations require too much time. This is not a valid objection. There are many young men and women in this and other cities and throughout the country districts, who have been thoroughly trained in laboratory methods, who are not only ready but eager to do this work for us. Why should the busy clinician hesitate to employ these helpmates, when by such examinations diagnosis is made more exact and satisfactory and the struggling scientist is encouraged as he deserves to be?

It was a source of great satisfaction while writing this paper to meet one of our own number, grown gray in service, engaged in this work at the bedside with his microscope examining case after case himself, as thoroughly conversant with the newer methods of diagnosis as the most recent graduate. *Such application of exact science to our art becomes an important factor in medical practice.*

As experience grows, as we apply rational methods, including the aid received from a thorough study of the blood and bacteriological investigation, the deliberate consideration of physical signs and subjective symptoms, malignant endocarditis becomes a condition which will in the large majority of cases not only be suspected but positively diagnosticated.

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## NEPHRORRHAPHY IN INTERMITTENT HYDRONEPHROSIS.*

BY J. WESLEY BOVÉE, M.D.,
OF WASHINGTON, D. C.;
PRESIDENT SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION, FELLOW AMERICAN GYNECOLOGICAL SOCIETY, ETC.
WASHINGTON, D. C.

IT IS a pleasure indeed to be invited to meet with this Society to-day, and my sense of gratitude is not unmingled with a feeling of inability to present to you the subject of the relation of movable kidney to intermittent hydronephrosis. I trust my humble effort will meet with your sympathy. Hydronephrosis is a term applied to overdistention of the kidney by retention of urine from any cause. Martineau, in 1785, called it "hydropsrenis;" and Johnson, in 1816, "hydrorenal distention;" Rayer, in 1841, used the term "hydronephrosis," which ever since has been the accepted term. It is to be distinguished from renal cysts by the fact that the latter have no connection with the pelvis of the kidney but are formed within the structure of that organ, while hydronephrosis practically always involves the pelvis of the kidney and usually more or less of the ureter. This condition may involve one or both kidneys.

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* A paper read by invitation at a meeting of the Tri-State Medical Association of Western Maryland, Western Pennsylvania and West Virginia, at Cumberland, Md., December 11, 1902.

*Causes of Hydronephrosis.*—Hydronephrosis may be either congenital or acquired and no matter what variety it may be the obstruction is never both permanent and complete, as experiments have shown that atrophy of the kidney inevitably follows prolonged suspension or loss of function of that organ. Moreover, repeatedly has a ureter been accidentally ligated during a surgical operation and no trouble followed. Again the ureter has been accidentally severed under like conditions and the proximal end purposely ligated, a slight swelling in the region of the kidney occurring later and soon permanently disappeared. The obstruction may be complete for a short time or partial for an almost indefinite period. In the congenital variety malformation in the ureter, kidney or renal artery is frequently present. The ureter may be imperforate or enter too obliquely into the pelvis of the kidney or the artery or a supernumerary one may cross and compress the ureter. This duct has been found twisted upon its own axis in some cases. Congenital diverticula of the kidney have sometimes been found the cause of hydronephrosis and even pyonephrosis. The vesical orifice of the ureter has been found inelastic preventing free flow of urine. Urethral and bladder abnormalities may produce congenital hydronephrosis and in such cases it is usually double. One case was reported in which a tightly constricted preputial opening was the only assignable cause. These are only a few of the large number of causes of congenital hydronephrosis. It must be remembered that congenital causes may not produce hydronephrosis for a long time, even years after birth.

The causes of the acquired variety embrace also a large number of conditions. If the urethra or anterior portion of the bladder be the seat of it the effect will be noticed on both sides. When the obstruction is along a ureter the corresponding side alone will be involved. Such obstruction may be in any portion of it, but is most apt to be at one of the three principal points of constriction, viz., at the outlet of the pelvis, at the point where it crosses the common iliac artery and at a point about one inch from the bladder. These are places of normal marked narrowing of the canal of the ureter. There may be a kink in the ureter or a calculus lodged in the duct. A tuberculous, carcinomatous or other form of growth may press upon the duct, either continuously or intermittently. A large number of other conditions have been found to cause it, but the conditions we are to particularly consider are of the intermittent type. This form of the condition is due to a cause acting with intermissions and is usually along the course of the ureter. It may be due to the pressure of a solid tumor of some movable organ such as an ovary or the uterus, or a floating spleen, or the relaxation of the peritoneum such as is met with in floating kidney and which permits temporary flexions in the ureter; the presence of a calculus that occasionally blocks the ureter and then permits urine to escape by it may have a similar effect. Valve-like constriction of the ureter acts similarly. In fact these constrictions are now recognized as a quite common condition and surgical relief of it has furnished one of the cleverest chapters in surgery. Witness the brilliant success in the first case of operation for relief of valve-like constriction of the ureter by Kuster, resulting from hydronephrosis in an only kidney in a young man. But by far the most frequent cause of hydronephrosis is movable kidney.

According to Henry Morris, abnormal mobility of the kidney was a subject of a chapter by Mesue of Venice more than four hundred years ago (see Editions 1497, pp. 187 and 1561). Francis Pedemontanus in 1587 and 1623 (p. 75), and Riolan in 1682 wrote on this subject, but it became of deep interest to the profession only after Martin, of Berlin, in 1878, did the first nephrorrhaphy for this condition, and Hahn (who died last month), of the same city, in 1881 published his first operation for fixing a movable kidney. Since that time this condition has held the careful attention of the surgical world. Probably Edebohls, of New York, has done more than any other to make the various relations of this condition understood, to formulate the plans for its treatment and the indications for each and to demonstrate the excellent results of such treatment. Mobility of the kidney to a limited degree is essentially physiological. Its elastic attachments to firm adjacent structures permit its upward and downward movement with the diaphragm and its slight depression from force of gravity with the individual in an upright position. In the average person this mobility varies little from one inch, the extent being different in different individuals. The lessened depth of and greater width of the inferior part of the renal fossa in women are reasons assigned by Deletzne and Volkoff (*Med. Mod.*, March 10, 1897), for the greater mobility in this sex. The extent of downward movement of the movable kidney is limited only by the cul-de-sac of Douglas.

Just here it is well to refer to the supporting structures of the ureter that we may clearly understand the causal relation borne to intermittent hydronephrosis by a movable kidney. The ureter in its course from the kidney to the bottom of the pelvic basin is supported by the connective tissue in the wall of the peritoneum. As far back as in 1856 Gigon noted that the ureter was at the time markedly bent when the kidney was displaced downward in considerable degrees of mobility and he suggested it might be a frequent cause of complete obstruction to the urinary current. This suggestion has become a fact frequently demonstrated. In truth such kinking of the ureter is frequently observed. It is easily understood that this duct will resist depression with the kidney and will only yield as the kidney is depressed and pulls downward that portion of the ureter above it. This naturally causes a sharp curving or an angulation of the duct which obstructs the passage of the urine by that point, which obstruction is only relieved by the kidney returning in some way toward or to its normal position. When this occurs the accumulation of urine above the point of obstruction passes rapidly to the bladder.

*Symptomatology.*—The symptoms of intermittent hydronephrosis are usually preceded by those of movable kidney which are usually indefinite and indeed may be due to slight distention of the portion of the ureter above the obstruction and of the kidney. But the symptoms of a well marked case of intermittent hydronephrosis are intermittent attacks of localized tenderness in the region of the kidney, changing to severe pain, the degree of which depends largely upon the degree of distention or partly upon the length of time the condition has existed. A scanty amount of urine is voided during the attack. This may be due partly to a reflex action upon the other normal kidney, partly or entirely suspending its function, but principally, I believe, to the stoppage in the affected side. Usually during the attack a soft tumor may be felt in the region of the kidney. Suddenly the patient experiences a sense of relief from suffering and shortly begins to void urine with the result of passing large quantities for a few hours. With this passage of so much urine the tumor disappears and the tenderness lessens and may completely disappear before the occurrence of another attack. The urine in hydronephrosis is lacking in solids, odor and acidity.

*Diagnosis.*—The diagnosis of intermittent hydronephrosis is based upon a history of previous attacks of a similar character, the localized pain and swelling, the small amount of urine voided during the attack and large amount passed during the disappearance of the pain and the marked difference in character of the two specimens. The presence and disappearance of the tumor in conjunction with the above symptoms is of great value in diagnosis, as is the discovery of a movable kidney upon a subsequent examination. As most cases of intermittent hydronephrosis are due to movable kidney this is presumably the cause of the attack but search for other contributing causes should not be neglected and if not found treatment of the movable kidney should be instituted.

*Treatment.*—For this nothing can be more rational than the employment of some means to prevent renal displacement. Various bandages with repeated modifications have been used for this purpose with little success. Nephrorrhaphy is the remedy *par excellence.* In a number of cases I have been surprised by the absolutely permanent relief of the suffering from this condition in which nephrorrhaphy has been done. The following cases will serve as examples:

*Case I.*—Mrs. F., forty-six years of age, white, widow; was referred to me by Dr. C. R. Collins, for severe pain in the right side. She was at the time and had been for two years past an inmate of the Home for Incurables. At various intervals during the past nine years she had suffered with attacks of intense pain in the right side of the abdomen, lasting for a number of hours and durwhich Dr. Collins had at various times found one to two grains of morphine given hypodermically was insufficient for relief and chloroform anesthesia was required. Her last attack was four months before my seeing her November 23, 1897. An examination revealed the right kidney hovering over the brim of the pelvis. Two days later the kidney was delivered through a loin incision carefully palpated and its capsule split along the convex surface and sutured to the muscles of the back. The kidney was found to be normal in size and consistency and the upper few inches of the ureter slightly larger than normal. The patient has had no more attacks.

*Case II.*—Mrs. C., white, twenty-one years of age, married and had one child three years ago, after normal labor. She was sent to Columbia Hospital March 25, 1897, suffering with severe pain in the region of the right kidney. For three years she had suffered at frequent intervals with like attacks. An examination showed a large, soft pyramidal shaped mass slightly above and to the right of the umbilicus. The presence of the kidney in its normal position could not be made out. Intermittent hydronephrosis was diagnosed and gentle pressure of the mass upward gave the patient a sense of relief. A bandage was applied over compresses to continue this pressure with the result of completely relieving the pain and disappearance of the tumor with voiding of a large quantity of urine. On the following day the kidney was found movable over an extent of nearly four inches. March 29 nephrorrhaphy was done, and up to last spring, which was the date of my latest information she had had no subsequent attacks.

The operation is by no means severe, taxes the patient's vitality but slightly, and promises almost certain relief by preventing a recurrence of the angulation of the ureter. By fixing the kidney in its normal position the ureter is straightened and the temporary angulation of it, which has caused the intermittent obstruction, is removed. The principle underlying the indication for nephrorrhaphy is a simple one in physics and if the operation be correctly done gives promise of permanent relief.

1404 H Street.

# EXTRAPERITONEAL LIGATION OF EXTERNAL ILIAC FOR FEMORAL ANEURISM.

BY WM. B. CRAWFORD, M.D.,
OF SAVANNAH, GA.;
ATTENDING SURGEON, ST. JOSEPH'S HOSPITAL.

John D., thirty-eight years of age, colored; barber. Family history negative. Previous personal history syphilitic. Habits—alcoholic. His present illness began Nov. 28, 1902. He fell and struck the left thigh on the upright end of a heavy piece of timber. He suffered only a small amount of pain at the time. Two days after the injury the thigh began to swell, and pain, which had been intermittent, returned. Relief was obtained by the recumbent position. He remained at home for three days unattended. At the end of this time the swelling decided him to call a physician, who made a small incision, the diagnosis of abscess being made. Fortunately only a "medical incision" was made resulting in the abstraction of a small amount of blood. This was controlled by tight bandages and the patient was advised to go to the hospital.

I examined the patient three days later, eight days after the injury. At that time I found a powerfully built man, 168 pounds in weight, with healthy heart, lungs and kidneys. The arteries throughout his body were considerably thickened and palpable. The left upper thigh was the seat of a pulsating tumor, extending from Poupart's ligament to the junction of the upper and middle third of the thigh, 5½ inches in length, three inches wide and two inches in height. The usual physical signs of aneurism were present and the leg and foot were considerably swollen. On the inner side of the tumor surface the incised wound still oozed. There existed a dull, boring, and continuous pain. On account of the general condition of the vessels and time of duration, it was the writer's opinion that the entire limb would have to be sacrificed, nevetheless it was decided to attempt ligation and wait for a week or ten days for developments.

His temperature at this time was 98.6° F.; pulse 68; respiration 20. Urine Sp. Gr. 1.020; acetone, albumin and sugar negative. Ether, time 20 minutes.

An incision 3½ inches long (parallel to Poupart's ligament and corresponding to the McBurney's for appendicitis) was made through the skin to the external oblique. Intermuscular separation to the peritoneum was practised. The peritoneum itself was then easily separated, going outside until the vessel was palpated, which vessel was found to be shoved up and to the outside of the usual site. The peritoneum was then retracted, exposing the vessels. In passing in the ligature carrier the wall of a vein was wounded and the wound immediately filled with blood. This hemorrhage, however, was controlled by pressure of the finger, replaced by hot-gauze packing for five minutes. At the end of that time, as there was no oozing, the packing was removed and a silk ligature was tied. This caused an immediate stopping of the pulsation in the tumor. The wound was then washed out with salt solution, the parts restored to their original position, the separated muscles closed with catgut No. 2, the skin with interrupted and continuous silk sutures, the wound dressed with sterile gauze and cotton, and the entire limb swathed in cotton and bandaged. The pulse during the operation averaged 80.

The after-treatment consisted in elevation of the leg and continuous heat combined with Tufnell's treatment. No pain or discomfort followed the operation.

Primary union took place in the wound. Pulsation was felt in posterior tibia artery on the third day. The foot and leg remained cold for five days and for twelve days after were colder than the leg of opposite side.

The heat and elevation were continued constantly for 17 days. Three weeks after operation the tumor had decreased to one-half of its original size and no pulsations could be felt. The patient was discharged from the hospital with instructions to keep in bed on arrival at his home and to continue potassium iodide. He at this time was getting 120 grs. per day. Patient remained in bed for two weeks at home, at the end of which time an examination revealed a small tumor, one-third of original size, and with no pulsations. The circulation in the foot was good. Since this time I have seen the patient on an average of twice per month and he has had no further trouble from the old condition and is now at work.

I wish to call particular attention to the slight trauma necessary and the rapidity of the formation occurring in one already suffering from endarteritis.

## INTUSSUSCEPTION: REPORT OF A CASE REDUCED BY OPERATION.*

BY GEORGE TULLY VAUGHAN, M.D.,
OF WASHINGTON, D. C.;
ASSISTANT SURGEON-GENERAL, U. S. MARINE HOSPITAL SERVICE;
PROFESSOR OF SURGERY IN GEORGETOWN UNIVERSITY.

IN his study of 1,000 operations for acute intestinal obstruction, Gibson found that intussusception caused the obstruction in 187 cases, thus holding the second place in point of frequency in the etiology of this condition, hernia coming first with 354 cases.

*Varieties.*—Four varieties of intussusception are given, in order of frequency as follows: (1) *Ileocecal,* in which the ileum with the cecum slips into the colon, the ileum continuing to push the ileocecal valve in front of it, and to invaginate the colon; (2) *enteric,* in which the small intestine telescopes itself; (3) *colic or colicorectal,* in which the colon telescopes itself or the rectum; (4) *ileocolic,* in which the ileum slips through the ileocecal valve, the cecum and colon maintaining their normal position. According to Wiggin, 89 per cent. belong to the ileocecal variety. According to the degree of obstruction or strangulation of the bowel, intussusception may be acute or chronic. The *acute* form may, like strangulated hernia, produce death in 24 hours or the patient may survive two or three weeks, while the *chronic* form may last indefinitely with symptoms of stricture rather than strangulation of the bowel.

*Etiology*—It is estimated that more than half the cases occur in children under ten years of age, and more than one-third of all cases occur in infants under one year of age. Wiggin found it three times as frequent in males as in females. Whatever produces violent and irregular peristalsis, as indigestion or traumatism, may cause

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* Read before the Medical Society of the District of Columbia, Jan. 21, 1903.

the condition. The circular muscular fibers contract and diminish the size of a segment of bowel while the longitudinal fibers contract and pull the segment of larger caliber up over the contracted portion and thus the telescoping begins. The inside tube, doubled on itself with is peritoneal layers approximated, constitutes the *intussusceptum*, while the outside tube of a single layer is the *intussuscipiens* or receiving part and has its mucous coat in contact with the outside mucous coat of the *intussusceptum.* The *intussusceptum* varies in length from an inch or two to two or three yards and the apex of the *intussusceptum* may be felt in the rectum or it may protrude through the anus. Traction and compression of the blood vessels in the mesentery soon disturb the circulation and lead to inflammation and perhaps gangrene, sometimes with sloughing of the entire intussusceptum and a spontaneous cure. Occasionally the invagination is *compound,* the entire intussusception telescoping the bowel below, taking on two more coats and giving it five layers, and it is said that even a third invagination of the same portion may occur, giving the intussusception seven layers.

*Diagnosis*—The diagnosis is made by the age of the patient, the sudden occurrence of colicky pain, followed by vomiting, constipation, and if the colon or rectum be involved, by the passage of blood and mucus, accompanied with tenesmus. A tumor can be detected in more than half the cases, either in the rectum or it may be felt through the abdominal walls of an elongated, cylindrical or sausage-shape, more frequently on the right side. Hernia, volvulus, fecal impaction and intestinal obstruction from other causes must be excluded.

*Treatment.*—The rational, sensible and life-saving method of treatment is laparotomy as early as possible within the first 24 hours. The same necessity for prompt operation exists as in strangulated hernia. Hydrostatic pressure with the child inverted may be tried during the first few, say 12, hours, but the method failed in three-fourths of the cases reported by Wiggin; besides there is danger of rupture of the intestine if too great force is used, and the beneficent results of a timely laparotomy should not be jeopardized by too long delay in the practice of uncertain and exhausting methods. Without operation the mortality is from 60 per cent. to 90 per cent.; with operation, according to Wiggin, only 32 per cent., and I am satisfied that if all cases were operated on within the first 12 hours, the mortality would be less than 5 per cent. The importance of early operation is well shown in Gibson's list of 187 operations for intussusception in which the mortality was 37 per cent., when performed on the first day, 39 per cent. on the second day, 61 per cent. on the third day, 67 per cent. on the fourth day, 73 per cent. on the fifth day, and 75 per cent. on the sixth day.

In the same way the difficulty of reducing the invagination increases with the lapse of time, 94 per cent. being reducible on the first day, 83 per cent. on the second day, 61 per cent. on the third day, and 40 per cent. on the fourth day. The abdomen should be opened over the tumor, usually through the right rectus muscle and the intussusception reduced by gentle traction on the intussuscipiens. Should this be impossible, and the parts of good vitality, they may be reduced after exposing the intussusceptum by a slit in the intussuscipiens or the intussusceptum may be amputated after clamping it with forceps. The two coats are then sewed together and the incision in the intussuscipiens closed; or the invagination may be side-tracked by a lateral anastomosis between the intestine above and below; or it may be literally cut out of the circuit, its two ends closed with sutures and left in the abdomen, while the circuit is restored by anastomosis between the remaining two ends of the intestine. If gangrenous, the entire mass should be removed and an anastomosis or artificial anus formed, preferably the former. In gangrenous cases the mortality is very high with any method of treatment—about 80 per cent. in Gibson's 56 cases, but without operation it must be remembered that such cases are doomed to inevitable death.

*Case.*—C. R., white, male, aged five years; was taken ill June 19, 1902, with cramps in the bowels thought to be the result of eating pineapples. There were vomiting and bloody stools, but no tenesmus. I first saw the patient with Dr. A. Behrend June 25, six days after the attack began. At that time he was lying on his back with knees drawn up, inclined to sleep (probably the effects of the laudanum he had taken), and very irritable on being aroused. Examination of the abdomen failed to detect a tumor but it seemed to be more sensitive on the right side. The temperature and pulse were slightly above the normal. Intussusception, appendicitis, and colitis were considered, and in the absence of a tumor or constipation and in the presence of bloody stools, I was inclined to the diagnosis of colitis and advised against operation unless something more definite should develop. Three days later, June 28, I was again called in by Dr. Behrend, the patient having grown worse. Examination of the abdomen now revealed an elastic, oblong tumor to the right of the navel, also tenderness and some rigidity of the right rectus muscle. Nothing could be detected by rectal exploration. Invagination was diagnosed and immediate operation advised, but some doubt was still felt, owing to the perviousness of the alimentary canal as shown by the use of bismuth.

The patient was removed to Georgetown University Hospital and operated on at 8:30 P.M. On opening the abdomen through the right rectus muscle over the tumor and turning the great omentum to the left, the tumor was seen to consist of the dark-colored distended ascending and part of the transverse colon, within which the cecum, appendix, and part of the ileum had disappeared. Firm traction on the ileum (the intussusceptum) failed to reduce the invagination, but this was accomplished with great facility by traction on the colon (the intussuscipiens). The intussusception belonged to the ileocecal variety, was about three inches long and contained six to eight inches of intestine. There were no adhesions. The abdomen was closed without drainage, with through and through silkworm-gut sutures and catgut for the peritoneum and sheath of the rectus. Recovery was uncomplicated. The stitches were removed July 9, the eleventh day, and the patient discharged recovered July 13.

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## MEDICAL PROGRESS.

### MEDICINE.

**The Distribution of Albumin in Animal and Human Body Fluids.**—The partly diagnostic, partly prognostic value of the investigation of normal and pathological body-fluids with respect to their albuminous content, has, according to J. Joachim (Pflüger's Archiv f. Physiol., Vol. 93, Nos. 11-12), been realized as early as the fifth decade of the last century. While the first workers in this domain were concerned solely with the quantitative determination of the total albumin, the recent investigators have profited by the advanced methods and have drawn important diagnostic data from the so-called "albumin-quotient," *i.e.*, the relation of albumin to globulin. The author investigated transudates and exudates, human and animal blood sera, albuminous urines, the fluids of an ovarian cyst and a hydrocele and the fluid of a subcutaneous edema. In the cases of transudates and exudates of the pleural cavity, there was in the former a greater constancy with respect to the proportions of albumin, euglobulin and pseudoglobulin, than in the latter. The relative proportion of euglobulin in hydrothorax is always lower than that in pleurisy. In examining the fluid of peritoneal ascites, the author found that in cirrhosis there is the highest relative globulin-content, the lowest albumin-content, and in carcinoma there is the lowest globulin-content and the highest albumin-content. The figures for ascites of cardiac origin stand midway between those for cirrhosis and carcinoma. In abdominal ascites caused by carcinoma of the liver, gall-bladder, ovary, stomach or intestine, there is the highest relative albumin-content and the lowest euglobulin-content. These changes are not to be ascribed to the cachexia secondary to carcinoma, for among the author's cases there were many in whom, at the time of puncture, the nutrition was good and the subcutaneous fat abundant. In tuberculous peritonitis there is no law governing the distribution of the albumin, for in all the proteid groups there are extraordinary variations. If transudates and exudates (and sometimes albuminous urine) be weakly acidulated with acetic acid, there is precipitated an albuminous body, which, identical with that constituent of para-euglobulin which is precipitated by acetic acid, is probably to be found more abundant in exudates than in transudates. By strong acidulation there is precipitated from exudates and certain urines (including those free from globulin or albumin) an albuminous body which very probably is a nucleo-albumin or a nucleoproteid. The recent researches of v. Limbeck and Pick on the blood of a large number of patients showed wide variations in the proportions of albumin and globulin, so that the figures obtained were of no diagnostic importance. With respect to albuminous urines, the author found pseudoglobulin in every case, euglobulin was absent in three cases, and in three others present only in very small quantities, and only in a case of amyloid degeneration approached pseudoglobulin in bulk. The albuminous-content mostly exceeds that of the globulin.

**Hereditary Syphilis.**—The ravages of this disease, which are so frequently seen upon the faces and bodies of so many children and adults, speak more forcibly than words and are only too conclusive as evidence that almost criminal mistakes in diagnosis are frequently being made by physicians. E. H. Griffin (N. Y. Med. Jour., March 14, 1903) reports a number of unfortunate cases which had been treated for months or years under the diagnosis of "scrofula" because all the typical symptoms and signs of syphilis had not been found, or more frequently because insufficient examinations of the patient had been made. Furthermore, it is not at all unusual for amputations to be made upon syphilitic conditions even by prominent surgeons and no excuses can be offered for such deplorable events except that of carelessness. He attributes these mistakes to the fact that Hutchinson's teeth are supposed by many to be constantly accompanying signs of this condition, when, as a matter of fact, they are present in only ten to fifteen per cent. of cases. Secondly, these diseases are very seldom dwelt upon to any length in the teaching of our medical colleges and the students are sent out to practice with the idea that syphilitic mothers will almost always miscarry and the child will not survive. Thirdly, the buccal cavity is not given the prominence it deserves in medical teaching. The buccal cavity has been looked upon as belonging to the dentist and throat man and by the latter as the site of diphtheria or a catarrhal affection. But in truth it belongs to no specialty and it is a cavity the inspection of which throws more light upon the average diagnosis than any other cavity of the body. The indiscriminate use of cod-liver oil and syrup of the iodide of iron in the so-called scrofulous conditions of children has allowed many a syphilitic patient to go on without efficient treatment till irreparable damages have been done. The early diagnosis of such conditions is all important.

**Glycosuria and Diabetes.**—Upon the treatment of these conditions W. H. White (Lancet, March 14, 1903) offers the following points: Diet, withholding carbohydrates is the first indication and usually secures a gain in strength and weight to the patient, and a decrease in the excretion of sugar and of oxybutyric acid in most cases. He has occasionally obtained an intense ferric chloride reaction, even after weeks of strict diet, although sugar had disappeared from the urine. In many cases dieting, he thinks, is made too strict, and as a rule there is no harm in permitting milk. When dieting ceases to control the glycosuria completely, that quantity of carbohydrates should be allowed the patient which does not increase the sugar in the urine. Levulose is certainly the best carbohydrate to give, and may be allowed up to any limit which does not increase the sugar in the urine. Inulin, which is the starch corresponding to levulose among sugars, should be allowed in the same manner. It occurs in dahlia tubers. It is a pernicious belief among patients that toast may be taken instead of bread, which is, of course, a mistake. Alcohol is allowable in the severe cases, to keep up the strength, but should not be sweetened. Many cases probably receive too little fat. Too sudden a deprivation of carbohydrate food may lead to coma. The reason of this phenomenon is not known, nor do we know why excitement, worry and anxiety also cause coma. The treatment of coma in diabetes is extremely difficult. Some cases yield to the injection of normal salt solution, others improve and then relapse after its injection. Better still is the use of large quantities of alkalies. If the patient feels drowsy, 100 grains of bicarbonate of soda, or 50 of carbonate of soda, dissolved in a pint of milk, should be taken three or four times a day. If the coma is deeper, the sodium bicarbonate should be injected subcutaneously, so that at least 200 grains are given in the first injection. It may be administered, with less satisfactory results, by the rectum. He also orders 50 to 100 grains of this drug taken during the day in very severe cases giving a ferricchloride reaction but no coma. Alkaline waters, regulation of the bowels, morphine and codeine are other usual indications.

**Anchylostomiasis.**—Additional notes on this rather popular malady are always welcome. Oswald Barker (Brit. Med. Jour., March 28, 1903) describes it as a disease caused by a leech-like blood-sucking parasite which infests the small intestines. The author believes it to be the indirect cause of a great many more deaths than is usually supposed. A better knowledge of this disorder will eliminate from death certificates the unfortunate statement "unknown cause." The anchylostoma duodenale was carefully described in 1879 by McConnell while making necropsies in Calcutta. Curiously enough the man who in part discovered it failed to recognize its profound importance, since as late as 1892 he wrote that he could not believe that the presence of this parasite in the gut had anything to do with the specific disorder known as anchylostomiasis. Sandwith, of Cairo, is of the opinion that the ancient Egyptians suffered from this disease, although no writings have been found on the subject. Our first knowledge of the parasite dates from 1838 when Dubini, of Milan, found the parasite. Until recently anemia of the tropics, owing to the prevailing ignorance of the habits and life history of this entozoon, was attributed to beriberi, malaria or debility, and as late as 1879, when the disastrous outbreak of anemia took place among the thousands of laborers in the St. Gothard tunnel, it was believed by many to be due to bad ventilation, mode of life, or to the *filaria sanguinis hominis*. It was, however, undoubtedly true anchylostomiasis. This disease is believed to exist uninterruptedly over about three-fifths of the habitable globe, but it is infinitely more common in some places than in others. In Egypt and in India the parasite is found in 90 per cent. of all microscopies made in certain well-known hospitals. It is probable that these entozoa form an exception to the general rule that a parasite lives as long as his host, their period of life having been pretty definitely shown not to exceed five years. Drinking water is probably not the chief source of infection, it being certain that the parasite gains entrance to the body in a way similar to, if not identical with, that by which it becomes infected with certain forms of tapeworm, viz., through the contamination of vegetables by their fertilization with the human dejecta. Again the Egyptians are so much given to geophagism that it is probable they actually infect themselves when eating the mud of their beloved river. Dr. Loos, of Cairo, asserts that infection may occur through the hair follicles of the skin, he himself having become infected in this manner. Treated early, this disease is easily cured, but if neglected, it tends to a fatal issue.

**Death of Fetus Following an Injection of Diphtheria Antitoxin into Mother.**—A very interesting question is raised in regard to the effect of antitoxin upon a pregnant woman by the report of a case by E. R. Houghton (Med. Rec., April 4, 1903). A woman eight and a half months pregnant, for the second time, the first child being healthy and vigorous, was given an immunizing dose of antitoxin after exposure to diphtheria. She at once became very faint and cold but in a few minutes rallied and was able to go some distance to her own home. Only two or three days previously the fetus had been found to be in vigorous condition by careful examination. No fetal movements were felt and no fetal heart beats heard after the above attack. She gave birth to a somewhat macerated child two weeks later.

**Terminal Coma in Diabetes.**—The mode of onset and the attending symptoms of diabetic coma are very variable as shown by several cases reported by A. R. Elliott (N. Y. Med. Jour., April 4, 1903). The severity of the cardiac and renal symptoms is extremely uncertain and death is frequently caused apparently by an exacerbation of those symptoms rather than those of diabetes. In the treatment of diabetic coma prophylaxis is of the first importance. It is not a condition which develops insidiously but is usually heralded for days by obvious signs. The earliest indication of trouble is the appearance in the urine of the acid toxines. The first to appear is usually acetone, which is readily detected by the sweet chloroformic odor it imparts to the urine and breath of the patient. Subsequently diacetic acid and $\beta$-oxybutyric acids make their appearance and occasion the beautiful Burgundy red color which follows the addition of a solution of perchloride of iron to the urine, and which is known as Gerhardt's reaction. To the careful observer the appearance of this reaction intensifies the conviction previously awakened by the presence of acetone, that the patient is drifting toward diabetic coma. The latter test should be frequently made for it indicates that the albumin assimilation has begun and it marks the dividing line between the mild and severe types. When this reaction appears the diet should be increased, for there is no longer hope of overcoming the glycosuria by dieting. He should be protected against all disturbing nervous influences, from fatigue and cold. He should drink freely, laxatives should be administered and copious colonic irrigations of saline solutions containing also sodium bicarbonate should be employed. Alkalies must be administered freely by the mouth and when coma threatens an intravenous or subcutaneous injection of a solution containing seven grains of sodium chloride and ten grains of sodium bicarbonate to the quart of water may be given. A bad prognosis should, however, be always given in case of coma, for a temporary relief is all that one may hope for.

## GENITO-URINARY AND SKIN DISEASES.

**Gonococcical Pruritus.**—Among the various blenorrhagic complications specific pruritus has not hitherto been mentioned, writes E. Domenici (Gazz. Osped., March 1, 1903) who describes a case in which an apparently cured blenorrhagic urethritis was followed by rheumatism accompanied with intense pruritus over the affected joints. The fact that salicylates and iodides failed of effect upon the rheumatism, that all remedies directed to the relief of the pruritus were used without avail, and that both affections ceased suddenly and spontaneously, leads the author to the belief that the blenorrhagic virus circulating in the blood was responsible for the pruritus as well as the rheumatism; and upon its elimination from the system, relief of both affections was immediate and permanent. Hence he concludes that in obscure cases of pruritus, the possibility of residual urethral foci of gonococcic infection should be borne in mind.

**Pelade of Dental Origin.**—Four cases are reported by Gravaza (Gazz. Osped., March 29, 1903) in which a bald patch appeared in the beard at a point corresponding to the position of a carious tooth. The alopecia had been preceded by severe neuralgic pain in the face; but after extraction of the tooth, this entirely subsided and the bald spot became, within a short time, covered with a healthy growth of hair.

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## SATURDAY, MAY 9, 1903.

### THE AMERICAN MEDICAL ASSOCIATION.

THE fifty-fourth annual meeting of the American Medical Association, held at New Orleans during the past week, will be red-letter event in the history of the organization.

Nearly two thousand members actually registered and all the sessions were crowded by interested auditors. The Sections on Medicine and Surgery, though provided with very commodious quarters, frequently had a number of auditors standing, during important discussions. More universal interest was shown in the scientific work of the various sections than has been the case in recent years, and this interest did not evanesce after the first two or three sessions, but lasted until the end of the meeting. The American Medical Association is certainly to be congratulated on the choice of New Orleans as a meeting place and the city will long have a pleasant place within the memories of the visitors.

The weather, contrary to the expectation of Northern visitors, proved very propitious. The heat was tempered by breezes that made the attendance, even at crowded scientific meetings, not unpleasant and the coolness of the nights more than made up for any unusual warmth felt during the day. As to the welcome given, no better exemplification of genial Southern hospitality has ever been afforded. Excellent care was taken in the provision of quarters for visitors, despite the crowding of hotels, inevitable at this season in New Orleans. The visiting physicians came early to the meetings and as a proof of their hearty enjoyment of the cordiality of the resident doctors, stayed longer than is, as a rule, usual at association meetings.

The members present were from all parts of the country, with, as might be expected, a preponderance of Southerners. The programs, especially of the sections of medicine, pediatrics and hygiene, were a reflection of this fact. In the medical section the possibility of the existence of a third disease intermediate to typhoid fever and malaria, yet absolutely independent of either, was a subject of illuminating discussion. A whole chapter in parasitic diseases in the Southern States was added by the papers and discussions on Strongyloides and Uncinaria, and the last word with regard to the cause and prophylaxis of yellow fever was said.

There is no more hopeful index of the brilliant future that is just opening up for medicine in America than the thorough way in which these somewhat abstruse subjects were discussed by Southern members of the Association. It has been realized that there were brilliant lights in medicine at the South but there can be no doubt after this that the rank and file of the profession, in spite of discouraging conditions in this part of the country in the not very distant past; are fully up to the standard of professional knowledge all over the country and are, besides, on the crest of the wave of enterprise that is sweeping over the South with regard to progress of every kind.

Few meetings of the American Medical Association have, we venture to say, been comparable with this in its successful attainment of every end of the annual gathering from the scientific business to the eminently admirable spirit of good fellowship that prevailed. The purely business meetings of the Association seemed to glide easier for the general good will. The organization of the national body and its close relationship to all lesser societies has now been perfected and all difficulty over the code seems in a fair way to be settled and a thoroughly united medical profession in America is not far off. The cordial hosts of the Association can take not a little of the credit for the success of the meeting to themselves. The representatives of the American medical profession have learned that the phrase

"Southern hospitality" is no empty name, and that even in the midst of the business bustle of the New South there is a spirit of welcome characteristic of the Southern gentlemen, of whom the country has so long been proud.

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### THE SITUATION IN CANCER ETIOLOGY.

NOTWITHSTANDING all that has been promised by investigators and the amount of material that has been published with regard to the possible parasitic cause of cancer, we are practically no nearer the solution of the mystery of malignant tumor etiology than before. One of the best German authorities on the subject, after a careful review of all the literature on malignant neoplasms in the various languages, declared, less than a year ago, that we are so far not in a position to say that there are any parasites that can produce genuine malignant neoplasms. Professor Lubarsch of Posen, who thus puts himself on record (Pathologische Anatomie und Krebsforschung) has for years occupied himself mainly with the problem of cancer etiology and is one of the most progressive of the modern pathological school in Germany.

He does not stop here, however, but in his recent monograph on pathological anatomy as related to cancer investigation he says that to his mind there is no doubt that there is between all the various forms of true neoplasms and destructive new formations so many relationships and transitional connections that we can not help but think that if one form of neoplasm is caused by parasites then it is highly probable that every other form has the same etiology. There are many forms of neoplasm, however, differing in many respects from true cancer, but sharing with carcinoma the tendency to destructive growth, to the formation of metastases and the production of cachexia, with regard to which it is extremely improbable indeed almost unthinkable that they should be due to parasitic agents. Even among the specially destructive epitheliomata, which have the true characteristics of carcinomata, there is a whole group whose peculiarities can be associated with a parasitic origin only by the greatest stretch of imagination. In this group Professor Lubarsch evidently includes those epitheliomata which are due to chronic irritation, such as the lip cancers, certain of the stomach cancers, especially those that follow ulcers of the stomach, cancers of the gall tract, which develop after the passage of a stone or in the scar left by some chronic inflammatory process.

In fact, Professor Lubarsch considers that in case an absolutely unobjectionable proof of the parasitic origin of cancer could be given we must still remember that other factors, especially chronic irritation, may play quite as important a rôle as the presence of the parasite itself. Besides chronic irritation, the presence of embryonal or postembryonal misplaced tissue products cells and the like must also be considered as quite as significant etiological elements for the production of malignant neoplasm as any parasites that may be discovered. It is not hard to understand this expresion of Professor Lubarsch's when we recall that the tumors which spring from such conditions as misplaced portions of suprarenal substance can produce all the characteristics of malignancy that are usually depended on for the differentiation of true cancerous tumors in the broad sense of the term. This is especially true as regards their power of producing the so-called cancerous cachexia with an added tendency at least to metastasis.

A very interesting commentary on Professor Lubarsch's conclusion is formed by Professor Hemmeter's article, "Concerning the Rôle of Intracellular Catalytic Processes in the Pathogenesis of Malignant Neoplasms" (see *The American Journal of the Medical Sciences,* April, 1903). Hemmeter proves by observation and experiment that the autonomous development of neoplasm of the stomach, at least of the adenomatype may be due to subtle damage to cytoplasm. He confesses that this is in fact another way of expressing the traumatic and irritation etiology of neoplasms. As the result of his experiments he shows that gastric ulcers can be experimentally produced and that the edges of these gastric ulcers can be brought to undergo adenomatous transformation by the injection of a cell free and sterile fluid obtained from a cancer of the corresponding organ from the same species of animal.

As is evident these considerations bring the problem of cancer etiology back from the bacteriologist to the hands of the physiologist and chemist. With the recent advances in chemistry and physiology this is not so apparently hopeless a standpoint as it would have seemed some years ago. At least, it is encouraging to realize that the most important pathological problem before the medical profession at the present time is being looked at from many sides and that our pathological investigators here in America are not alone following faithfully the footsteps of great men abroad, but with characteristic enterprise they are branching out into new fields with original methods and suggestive results.

We are glad to be able to point out one practical hint from these observations and others with regard to the influence of body fluids upon cells, which seems as though it might prove eventually helpful for the natural therapeutics of cancer. It has always been a mystery that cancer should give metastasis through the lymph channels very frequently, and only very rarely through the blood circulation. A number of previous observers and now Hemmeter suggest that the cancer cells represent forms of protoplasm which have become so far alienated and emancipated from the general physiological laws of the body that they actually represent cells foreign to the body. It is well known now that the serum of one animal acts upon the cells of another animal of different species in such a manner as to produce destruction of cells injected. The serum of the body brings into action this means of defense against cancer cells just as it would against any other foreign material. It is not impossible that a cancer serum should be obtained, that is a fluid whose hemolytic action upon cancer cells will be sufficient at least to lower their vitality and prevent their further growth. Hemmeter considers that this is a very hopeful direction for investigation with a view to prospective prophylaxis or treatment. The point of inquiry will have to be, according to him, "Does not the organism contain in its blood serum defensive substances capable of destroying cancer cells, as long as they are not flooding the circulation in excessive quantities? And, if so, how can this natural means of defense be augmented?"

## ECHOES AND NEWS.

### NEW YORK.

**The New St. Francis Hospital.**—The Sisters of the Poor of St. Francis will remove their hospital from East Fifth street, near Avenue B, to more commodious quarters, in the Bronx. The new building, the largest hospital of the order in this country, faces 142d street, and has a frontage of 326 feet by a depth of 107 feet at the wings. There will be nineteen large wards, giving space for 304 beds, and forty small wards, a number of which will be used for private patients.

**Dr. Austin Flint's Collected Works.**—Dr. Austin Flint's "Collected Essays and Articles on Physiology and Medicine" as arranged by himself, are soon to be published. In explanation as to why the two volumes are given to the public at present rather than posthumously the Doctor says in his preface: "They could not have appeared in their present form unless the collection, arrangement and revision had been made by myself." And one cannot but feel that he is wise in not leaving this important work to his literary executors. Most of the author's well-known essays are here reprinted save, of course, "The Physiology of Man" and his two text-books. The first paper appeared in 1855 and the last in 1902, the series covering a rather wide range of subjects, which will interest the general as well as the professional reader. For nearly fifty years Dr. Flint has been before the public eye.

**A Degree for Trained Nurses.**—Governor Odell has affixed his signature to the bill which provides for the recognition of trained nurses by the Regents of the University of the State of New York. Only nurses who shall pass the required examination are permitted to use the initials "R. N." or wear them upon uniforms. This is merely a step toward the discrimination of properly qualified nurses against those who are untrained and who attempt to pass themselves as "trained" without spending the necessary time and effort in preparation for their calling. It does not dictate as to whether a person can be fitted for the work in any other way than that now in use in the hospitals and training schools; but it does insure an employer against the incapable and unscrupulous who try to appear something they are not, while allowing him a preference for the nurse who can present a certificate of thorough equipment.

**Milk for the Poor.**—During the coming summer Mr. Nathan Straus is planning to enlarge his philanthropic work of milk distribution among the poor. For ten years this noble work has been going on and many thousand gallons of Pasteurized milk have been given to the poor of New York. Dr. Rowland G. Freeman, in an address before the City Medical Society on April 28th, commended the work as follows: "An important factor in the decrease of the death rate was in supplying a proper food to the bottle-fed babies by the Straus milk charity. Started in the year in which the decline in death began, with an output of 30,000 bottles, there was supplied in 1894 300,000 bottles, and in 1895, 600,000 bottles of inspected milk. The output then remained much the same until last year, when milk was certified by the milk commission of this society and was examined by the members, and the demand reached the great total of 1,200,000 bottles. This enormous increase in distribution is being accompanied by a diminution in infant mortality."

**New Professors at Columbia University's Medical Department.**—The trustees of Columbia University accepted last week the resignation of Drs. Weir, Peabody and Tuttle of the College of Physicians and Surgeons. A new chair in pharmacology and therapeutics was established in the medical school and Dr. Christian A. Herter, '85, who is connected with the Rockefeller Institute, was appointed as its first incumbent. He will have charge of the work in materia medica, formerly in the hands of Dr. Peabody. A new laboratory of experimental pharmacology will also be established soon. Dr. L. Emmett Holt, professor of the diseases of children, was assigned to a seat in the faculty. Dr. Edwin B. Cragin was assigned to take the place of Dr. Tuttle in the department of gynecology. No successor to Dr. Weir in the department of surgery was appointed. Dr. Weir was appointed professor of clinical surgery, and Drs. J. A. Blake and G. E. Brewer were made lecturers in surgery.

**Drug Samples.**—Attorney-General Cunneen furnished an opinion to the State Board of Pharmacy of New York last week as to the right of that board, through an inspector, to take samples from bottles of drugs exposed for sale in a pharmacy for the purpose of analysis to ascertain whether the substance is of the standard strength, quality and purity established by the latest edition of the United States Pharmacopeia. Proprietors of some drug stores are unwilling to furnish such samples to the inspector of the State board, although the board is perfectly willing to pay for the samples which the inspector takes. The Attorney-General says: "I think it entirely clear that it is the duty of a proprietor of a drug store to furnish to a member of the State Board of Pharmacy, or an authorized inspector thereof, samples of his goods upon being tendered the purchase price therefor, and that in the event of his refusal to do so, he thereby becomes liable both to criminal prosecution and to an action for the recovery of a penalty."

**Grip and Pneumonia.**—The bulletin of the State Board of Health of New York for the month of March says that the State is at present in the course of an annually recurring epidemic of grip. which began in the late fall, but made little impress prior to January. A few cases of death were reported from it as early as October, but the estimated mortality was not above 500 until January, when it was placed at 1,200 for the month, and for February it was increased to 1,500. It appears probable that the mortality of March was increased 2,000 by this disease. Available sources of information indicate a decrease thus far during the month of April. Separate record has not been kept of pneumonia save for the past two years. It was the cause of 8,800 deaths in 1902, or a little over 50 per cent. of the reported acute respiratory mortality. In January of this year, there were 1,223 deaths, in February 1,133, in March 1,290.

**Obituary.**—Dr. James Aloysius Roache, one of the most prominent physicians in Brooklyn, died May 3, at his home, No. 312 Jefferson avenue. The immediate cause of his death was pneumonia. Dr. Roache was born on May 15, 1859, in New York city. His father was Philip D. Roache, paymaster in the United States navy. He was educated in St. Patrick's Academy, St. Francis' College and at the Long Island College Hospital, from which he was graduated in 1891.

## PHILADELPHIA.

**Entertainment of Visitors.**—The Medical Club of Philadelphia will hold a reception at the Bellevue Hotel on the evening of May 15, in honor of Dr. George H. Simmons of Chicago, Secretary of the A. M. A., Professor von Mikulicz-Radecki of Breslau, Professor C. A. Ewald of Berlin, Professor Hans Kehr of Halberstadt, and Professor Hermann Tillmanns of Leipsic, Germany.

**Christian Scientists Lose Suit for Charter.**—The Supreme Court has sustained the decision of the late Judge Arnold in refusing a charter to the First Christian Church of Scientists in Philadelphia. The refusal was based partly on the fact that the church was conducted for profit and partly because the practice of the art of healing, as set forth by the Scientists, is opposed to the general policy of the law of Pennsylvania relative to the existence and treatment of diseases.

**Public Bath-House for Camden.**—The first public bath-house in Camden is soon to be turned over to that city by the contractors. The pool is 40 by 80 feet in size and so arranged that the water will flow constantly while the pool is being used. The water will be supplied from an artesian well. The structure cost $12,000, exclusive of the ground.

**Dr. Mayo to Address Academy of Surgery.**—The May meeting of the Academy of Surgery has been postponed until the evening of May 11, when the members will be addressed by Dr. W. J. Mayo, of Rochester, Minn. Following the meeting a reception will be tendered Dr. Mayo at the Hotel Bellevue.

**Dr. Martin Appointed Director of Public Health and Charities.**—Mayor Weaver has appointed Dr. Edward Martin the first director of the newly created Department of Public Health and Charities. Dr. Martin was born in this city in 1860, and was graduated from the Medical Department of the University of Pennsylvania in 1883. He is Professor of Clinical Surgery at the University of Pennsylvania, and also the Woman's Medical College, as well as visiting surgeon at the Philadelphia, St. Agnes' and Howard Hospitals, and consulting surgeon of the Bryn Mawr Hospital. He was surgeon of the Third Regiment for several years.

**A Case of Poliomyelitis in an Adult Involving All Four Extremities.**—This case was reported, with exhibition of the patient, by Dr. John K. Mitchell at the meeting of the Neurological Society, April 28. The patient was a young man of twenty years, who, after an attack including headache, pain in the back, fever, unconsciousness, etc., became completely paralyzed, not being able to move even his head. Motion afterward returned to some degree and further improvement is now following the systematic employment of massage, electricity and free movements of the limbs. Dr. Mitchell said that the prognosis in these cases depends largely upon the length of time after onset that treatment is begun. This is explained partly by the fact that in addition to the muscles involved by the lesion itself there is a simple atrophy of the other muscles due to their lack of use. The longer the condition persists the greater will be this atrophy. Hence the greater efficacy of early treatment which consists of massage, electricity and persistent free movement, the latter being very important. The beginning of improvement is very tardy in some cases. Notwithstanding the more favorable prognosis in early treated cases, it should be remembered that improvement may follow treatment in cases of long standing. In proof of this was cited the case of a girl of eighteen years in whom the paralysis was of 15 years' duration. Treatment was followed by marked improvement, which did not begin, however, until one year after the treatment was instituted. This case serves to emphasize the necessity of persistent efforts, especially in the cases of long duration.

## CHICAGO.

**Mikulicz in Chicago.**—Professor J. von Mikulicz, of Breslau, attended the meeting of the Illinois State Medical Society, held in this city. He will attend the American Medical Association in New Orleans.

**Illinois State Medical Society.**—The fifty-third annual meeting of this Society was held in Chicago April 29 and 30, and May 1 and 2, under the Presidency of Dr. M. L. Harris, of Chicago. Approximately seventy papers and four addresses were delivered before the three sections. The officers for the ensuing year are: President, Dr. Carl E. Black, Jacksonville; Secretary, Dr. E. W. Weis, Ottawa; Treasurer, Dr. Everett J. Brown, Decatur. Bloomington was selected as the place for holding the next annual meeting.

**Smallpox.**—Seventeen cases of this disease were discovered during the week, one of them being a convalescent, the nature of whose disease was not detected until he was well. The remaining sixteen were removed to the Isolation Hospital before there had been any serious exposure. Thirteen of the seventeen cases (all adults over forty years of age) had never been vaccinated at all, and four presented old doubtful scars of vaccination performed in infancy.

**Objection to Test.**—It is said that the medical students at the University of Chicago have protested against the revival of the supplementary examinations on the work of the first two years by the Faculty. The examination is designated as "an unnecessary burden and the survival of an obsolete system of medical instruction," and as "an unjust discrimination." The examination is in the entire work of the first three years. It is supplementary to the regular examinations, and is said to entail on the students a vast amount of special preparation, which is useless, as they are compelled to take a third examination in the same subjects when applying for license to practice.

**The X-rays.**—In a paper on this subject, read before a recent meeting of the Chicago Medical Society, Dr. Wm. Allen Pusey said that his experience with X-rays during the last year has been of the same character as that reported before this Society a year ago. The hopes of usefulness which the results then reported aroused have been confirmed by subsequent experience. The limitations and possibilities if the method have not been reduced by subsequent experience, nor have they been materially enlarged. In only one respect has his experience been less satisfactory than anticipated when he first began the work, and that is in the treatment of hypertrichosis. In a certain proportion of cases there is no question that superfluous hairs can be permanently removed by X-ray exposures, but in a certain number of cases, also, he has not been able to remove them permanently by any reaction that he was willing to produce. The field of usefulness of X-rays in the treatment of cutaneous affections has been gradually extending. In the treatment of malignant diseases the method still offers all the prospects of usefulness that the first startling results suggested. It is, of course, not effective in all cases of malignant disease, but, in his experience, it does all, in most cases, that could reasonably be expected of it, and it certainly has not disappointed any reasonable hopes that were aroused by the first results.

## CANADA.

**Medical Society of Nova Scotia.**—The Medical Society of Nova Scotia will hold its thirty-fifth annual meeting this year at Antigonish on July 1 and 2, under the presidency of Dr. J. J. Cameron of that place. Dr. W. Huntley Macdonald, Antigonish, is the secretary.

**Winnipeg Hospitals.**—The hospital accommodation of the city of Winnipeg consists of the General with 215 beds; St. Boniface with 200 beds; a maternity with 40 beds, and a small private hospital. This accommodation is not adequate for the growing needs of the Prairie City and increased accommodation is under contemplation. About two years ago the Winnipeg General Hospital was enlarged at a cost of $90,000; and the proposed new additions will cost in the neighborhood of $75,000. As many of the charity patients are immigrants a strong appeal will be made to the Dominion Government to assist in the proposed additions.

**Banquet to Sir James Grant, Ottawa.**—Sir James Grant was recently tendered a banquet by his medical friends of Ottawa and the Ottawa valley, the occasion being his jubilee as a physician in that city. For 35 years Sir James has been physician to the different vice-regal families who have occupied Government House. Sir James in consequence has always been received with the greatest distinction when in England, Her late Majesty, Queen Victoria, sending for him to pay her a visit at Balmoral, and give him the honor of a private interview. When in London last summer one of the best seats at the Coronation was reserved for him.

**Maritime Medical Association.**—The Maritime Medical Association will hold its thirteenth annual meeting this year at St. John, New Brunswick, on July 22 and 23, under the presidency of Dr. Murray MacLaren of that city, Dr. T. D. Walker, St. John, being the secretary.

**Jubilee of Dr. James H. Richardson, Toronto.**—On the evening of April 15 a large number of the former students of Dr. James H. Richardson, who for so many years was professor of anatomy in the medical department of Toronto University, gathered to do honor to their esteemed professor, at the same time a very fine old portrait of Dr. Richardson was presented to the University.

**Amendment to the Medical Act of New Brunswick.**—The physicians of the province of New Brunswick have had introduced into the legislature now in session an amendment to the Medical Act which provides that no duly registered practitioner in that province shall be liable to any action for negligence or malpractice by reason of professional services unless such action be commenced within one year from the date when, in the matter complained of, such professional services terminated.

**Ontario to Have a Hospital for Epileptics.**—The Ontario Government have placed in the estimates of the present session an item of $30,000 for the erection of initial buildings at Woodstock, Ontario, which shall be for the purpose of an Hospital for Epileptics. The official insane are divided into three classes in Ontario, viz., the harmless insane, such as epileptics; the curable insane; the incurable insane. It is the intention of the Government to have all these three classes in time kept in separate buildings. The buildings at Woodstock will be necessarily large, as there are about 1,000 official epileptics in Ontario.

**Insane in British Columbia.**—The anual report of the Asylum for the Insane at New Westminster, B. C., has been prepared by a medical superintendent, Dr. Manchester. At the beginning of the last official year there were in residence 284 patients and eight on probation. During the past year there were admitted to the institution 121, of whom 95 were males and 26 females, the admissions over the previous year numbering six. The discharges during the year numbered 61 and the deaths 26, which figures are almost identical with the previous year's report. The number remaining in residence at the end of the year was 311 with 16 on probation. Of the number admitted 50.41 per cent. were discharged not including the deaths; 24.8 per cent. recovered; and 25.6 per cent. died. The percentage of insanity to population in British Columbia is 1.67 to the 1,000. The total number of insane in the Dominion is 16,495 or 3.1 to 1,000 of population. The number of insane in Manitoba is 565; in New Brunswick, 1.054; Nova Scotia, 1,392; in Ontario, 7,511; in Quebec, 5,245; in Prince Edward Island, 357.

**Amending the British Columbia Medical Act.**—There has recently been before the courts of British Columbia a medicolegal case of interest. A physician was alleged to have attended a confinement while under the influence of liquor, the patient dying. Action was brought to compel the Medical Council to inquire into and pronounce upon the case, but the judge decided that this could not be granted. Apparently, as the outcome of this decision, an amendment was introduced into the legislature of the Medical Act which, if sanctioned by that body, would have the effect of compelling the Medical Council to inquire into any and every trifling complaint laid against any medical practitioner in the province. As a result of a conference between the Premier and a large delegation of medical men, this amendment will be altered so that a Supreme or County Court judge will first decide whether any such complaint, upon the evidence submitted to him, is of sufficient gravity to be the subject of investigation by the Medical Council. The Premier informed the medical men that their suggestions would likely be acted on and that the amendment would be so altered.

**Dominion Medical Council.**—The Quebec legislature by a large majority has rejected the motion to ratify the Canada Medical Act of 1902, commonly known as the Roddick law. After years of persistent and patient effort Dr. Roddick was successful at the last session of the Dominion Parliament in having this Act placed on tne Statute Books, but it was not to come into effect until every provincial legislature had passed ratification legislation favoring the Act and approving of it. All the provinces with the exception of Quebec, approved of the Act through their Medical Councils, and set about taking the necessary steps to have their respective legislatures approve of it. Amendments to the Canada Medical Act, or rather suggestions for them have recently emanated from the Province of Quebec; and they have taken such shape that the Medical Faculty of Toronto University have deemed it advisable to issue a memorandum calling attention to them and advising that Ontario canot possibly, in the interests of medical education in this province, accept any one of them. It begins to look as though the whole question of Dominion Registration will have to be threshed out again in the provincial and national medical societies before Quebec and the profession in that province can be brought to believe in the principles of the measure.

**Obituary.**—Dr. Emily Howard Jennings Stowe, Toronto, died in Toronto during the past week. She was the first woman physician to practise medicine in Canada. When she decided upon the study of medicine she made application in 1865 to the senate of Toronto University for permission to attend lectures but was refused. She then went to New York where only four years before women students had been admitted. Her daughter, Dr. Stowe-Gullen of Toronto, was the first woman to take a degree in medicine in Canada. Dr. Stowe had retired from active practice in 1893.

## GENERAL.

**International Dermatological Congress.**—It has been decided to hold this congress in Berlin, September 13 to 17, 1904.

**Dr. Harris Goes to Chicago.**—Dr. Norman M. Harris, associate professor of bacteriology at the Johns Hopkins Medical School, has accepted the position of first assistant to Dr. E. O. Jordan, professor of bacteriology at the University of Chicago.

**The Plague in India.**—Through a private communication dated April 10 we are creditably advised that in Bombay the Plague is fearful even after 7 years. There are an average of 375 cases daily in the city and in the province, over 30,000 deaths weekly. Only about one per cent. only of the cases recover and a person attacked generally dies as much from fright as from plague. Serum and all treatment in fact, have been given up as useless.

**Physicians of Transatlantic Steamship Companies.**—The average salary of the ship's physician on the American and English lines is said to be from $50 to $70 per month; while on the German and French lines the remuneration is still more meager, averaging from $25 to $60 per month; and the salary is subject to further reduction during those months in which ocean travel is much decreased.

**New Fresh Air Farm.**—The Fresh Air Guild of the St. Vincent de Paul Society, purchased a 25-acre farm at Valley Spring, N. Y., yesterday, to be used as a summer home for poor children. The guild has had a farm at Baychester for five years, but it provided for only 1,000 children during the whole season. The new farm already has buildings for 200 children at a time, or 3,000 during the summer.

**Cholera at Manila.**—Recent advices from the Philippines report that cholera is gradually increasing throughout the archipelago concurrently with the return of the hot season. The deaths from the disease in Manila average twenty weekly. To-day the bodies of two cholera victims were found in the Pasig River. The health authorities have strengthened the guards employed in preventing the contamination of the water supply.

**Obligatory Reports of Phthisis Under Ferdinand II. of Spain.**—In view of the present widespread crusade against tuberculosis, much interest attaches to the decree, which has recently come to light, issued by Ferdinand II. of Spain in 1751, making reports of tuberculosis cases obligatory. By the terms of this decree, after the death of a phthisical patient all his personal belongings, wearing apparel, bed linen and furniture were to be burned and the room occupied by him was to be cleaned and whitewashed. The physicians who failed to report patients suffering from tuberculosis, or deaths from that disease, were subject to a fine of 200 ducats and a year's suspension for the first offense; and 400 ducats with four years' suspension for the second.

**Meeting of the Maryland Medical Faculty.**—On Wednesday and Thursday of last week the one hundred and fifth meeting of the Maryland Medical and Chirurgical Faculty was held in Baltimore, with the venerable Dr. Wm. Travis Howard as its President. Many valuable papers were read and discussed by its members. Some interesting discussions relative to reciprocity between the practitioners in Maryland and the District of Columbia was had. At the present time the licensed practitioners of the District are permitted to extend their professional labors into the State but the members of the Maryland Faculty are not allowed to practise in the District.

**Home for the Consumptive Poor of New Jersey.**—The legislature has appropriated $50,000 toward the erection of a suitable tuberculosis hospital at Lebanon, N. J., with the promise of more when the plans shall be completed. Only the poor will be accepted as inmates and no incurables will be retained in the institution. The present scheme provides for 250 patients with six resident physicians in charge, who will probably be chosen by competitive examination. Dr. Charles Kipp of Newark is president of the board of management, Dr. James Green of Elizabeth is secretary, and Col. A. A. Stevens has been appointed treasurer.

**"Cat-Fear."**—Dr. Weir Mitchell in addition to being an acknowledged authority on nervous diseases and the influence of snake poison, as well as a master of the art of expression, has lately been investigating a psychological phenomenon which he is pleased to call "cat-fear." His studies are based on the fact that certain individuals undergo a sort of hysterical excitement when in the presence of a cat and this dread in some he finds to be so great as to excite terror or even convulsions. Mr. Rafford Pyke seeks to aid in the explanation of this fact in a somewhat illogical manner. He says: "The peculiar loathing which man feels for the snake extends in highly sensitive natures to creatures which resemble or suggest the snake. Now, the cat is essentially a snaky creature. Just watch a cat as it moves about at ease, as it lies in the sun, or as it curves itself into its usual position when about to sleep. Its stealthiness, its sinuous movements, the undulations of its lithe body are closely comparable with what we notice in the serpent." This dread is, we believe, the dread to which Dr. Mitchell has given the name of "cat-fear." It may be called "cat-fear," but in the last analysis it is a secondary manifestation of snake-fear. It is scarcely likely that this attempt will add to our stock of knowledge on the subject.

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# SOCIETY PROCEEDINGS.

## NATIONAL CONFEDERATION OF STATE MEDICAL EXAMINING AND LICENSING BOARDS.

*Thirteenth Annual Meeting, held at New Orleans, May 4, 1903.*

An address of welcome by the Hon. Paul Capdeveille, Mayor of New Orleans, on behalf of the city and citizens of New Orleans, opened the week's work in medicine, dedicated the days to the medical visitors. The interest of all was evident in the meeting of this organization, which looks to the raising of the standard of medical education.

After addresses of welcome on behalf of the medical profession of New Orleans by Dr. Charles Chasaignac, on behalf of the medical department of Tulane University, by Dr. Rudolph Matas, and on behalf of the State Board of Medical Examiners of Louisiana, by Dr. A. F. Barrow of St. Francisville, La.; the annual address of the President of the Confederation, Dr. N. R. Coleman, of Columbus, O., was delivered.

**Improvements Needed in Medical Education.**—Dr. Coleman dwelt on the amelioration of medical education since the establishment of the National Confederation, and pointed out reforms still needed. The standard of preliminary education before the medical studies are entered upon should be raised. Much has been done, but much yet remains to be done. Especially is this true with regard to a training in the sciences. Training not only in chemistry and in biology, but also and particularly in physics is needed. An attempt to make up for the lack of such training by giving a smattering of the sciences during the medical course is futile. Longer hours are needed and the standard of work should be so many hours per week, rather than so many weeks in the year, in general. Especially should there be more clinical teaching than is at present customary, and this should be of a personal character, so that each medical student shall have the opportunities to study individual cases under proper guidance.

**Too Many Medical Schools.**—There are over 150 medical colleges in this country. There should not be more than one-half as many. Then professors could be given good compensation, as they deserve and should not hold their positions merely for the sake of their practice. Such important subjects as anatomy, physiology and chemistry are sometimes taught in less important colleges by the same man. This is evidently an impossible task. The basic sciences must be taught well, or the medical education always remains defective. This is particularly true with regard to a knowledge of the relations of important organs in the thorax and abdomen, in which students are so often found to be defective. Physical diagnosis is often relegated to teaching by young and comparatively inexperienced professors. This branch is too important to be thus neglected or lightly passed over.

**Some Questions and Answers.**—"What is podagra and its cause?" Answer: "A disease of the parotid gland commonly known as mumps." Then follows a long description of parotitis. Answer: "Ergot poisoning due to the ingestion of bread containing the poison." Others spoke of it as paralysis as a form of obscure disease. Some confessed ignorance. "What is hemoptysis hematemesis and hematuria?" Many students mixed these up. Some failed entirely to realize their significance. "What is Cheyne-Stokes breathing?" "Short respiration." "What is morbus ceruleus?" Answer: "Blue disease." Forty-four out of forty-five students failed to answer this question correctly. Medical students do not think, and hence the queer answers to these questions. System and method of teaching are more important than amounts of information.

**Endorsement of Medical License in New Jersey.**—Dr. L. B. Godfrey, of the State Board of New Jersey, gave its requirements. An academic education must be attested. Four years' study of medicine must have been made and must have been licensed by some approvd State board; must be endorsed by regular medical practitioner of New Jersey, and must have approval of medical society of his neighborhood or by two reputable practitioners. There must also be a certificate of good character. The experience with this system has given excellent satisfaction and has the element of requiring personal references that make it much better than any system of reciprocity.

Dr. W. F. Morrow, of Missouri, complimented the Confederation on the uplifting of the standard of medical education. During the past year 45 per cent. of those examined in Missouri were refused diplomas. The medical profession of this country must organize in order to protect itself from the efforts to influence legislation that will surely follow this proper elimination of the unfit medical students.

**Diploma Requirement Before Examination.**—Dr. E. B. Harvey, Secretary of the State Board of Medical Examiners of Massachusetts, said that he believed in the principle of the Missouri State Board, which tests applicants for diplomas to practice without any attention to their having a medical diploma or not. Every State shall yet have a Medical Council who will decide the qualifications of students rather than the faculties of the colleges, as obtains now in England.

Dr. Webster, President of Illinois Examining Board, said that it is an imposition for a medical examining board to have to examine every one who applies without regard to a previous diploma from a medical school. It is a matter of regret that the law in Missouri should require this. Dr. Beates, President of State Examining Board of Pennsylvania, said that the board is only a test. The colleges give knowledge. Applicants without a degree may memorize enough by chance to pass without real knowledge. We are not in a state to be compared with Europe as yet.

**Constitutionality of Medical School Diploma Requirement.**—Dr. Van Meter, of Colorado, said that if it is required that all those to be examined must have diplomas in medicine then the constitutionality of the law comes into question, since it is class legislation. The profession must not ask too much of the law-making power. Besides it is scarcely American thus to limit the number of applicants.

Dr. Harvey, of Massachusetts, said that one-half of the 150 odd regularly chartered medical schools of this country are nothing more than diploma mills. It is important that the State board should be the last resort and that too many pre-requirements shall not be insisted on.

Dr. Spurgeon, President of the Indiana State Board of Medical Examiners, said that the profession should require as many tests as possible. Even at present unworthy men obtain licenses. Dr. Spurgeon detailed some recent experience with substitution. All applicants should be required to present evidence of some attempt to prepare properly by attendance at medical school before coming up for examination.

At the afternoon session, Dr. George W. Webster, of Chicago, the chairman of the committee on curriculum, recommended the adoption of the following regulations: 1. The standard curriculum, which is to be adopted as a minimum requirement for the degree of M.D., shall consist of the following: (a) The course shall consist of four terms in four separate calendar years. (b) Each term shall consist of 30 weeks of work, exclusive of holidays, and of at least 30 hours in each week, or 900 hours of actual work. (c) The entire course of four years shall consist of not less than 3,600 hours of actual work. (d) This should be a standard of required work. Any elective work should be in addition to the above. (e) The average time devoted to each study in the curriculum should be approximately that given below under g. (f) Clinical work should constitute at least one-fourth of the work of the entire course.

After careful collation of the answers obtained to questions sent with regard to the amount of time given to various subjects in many medical colleges, the following averages, as given in the first column, were obtained. Reducing these averages by about 10 per cent., the committee considers that it is not too much to ask that at least the number of hours given in the second column should be allowed at all medical colleges that wish to be rated as up to the average standard.

| Average course at present. | Average. | Proposed Standard. |
|---|---|---|
| (g) Average total hours in 43 colleges in 4-year course | 4095 | 3600 |
| Average total hours in 43 colleges in: | | |
| First Year | 973 | 900 |
| Second Year | 1039 | 900 |
| Third Year | 1040 | 900 |
| Fourth Year | 1090 | 900 |
| Average hours in 43 colleges devoted to the following subjects: | | |
| Chemistry | 375 | 340 |
| Anatomy | 549 | 500 |
| Histology and Embryology | 219 | 200 |
| Physiology | 276 | 250 |
| Pharmacology and Therapeutics | 118 | 110 |
| Physical Diagnosis | 61 | 55 |
| Surgery | 596 | 540 |
| Bacteriology | 131 | 115 |
| Etiology and Hygiene | 33 | 30 |
| Pathology | 295 | 260 |
| Medicine | 544 | 500 |
| Obstetrics | 177 | 150 |
| Dermatology and Syphilology | 64 | 50 |
| Laryngology and Rhinology | 67 | 55 |
| Pediatrics | 72 | 60 |
| Ophthalmology and Otology | 106 | 95 |
| Gynecology | 145 | 130 |
| Neurology | 82 | 75 |
| Mental Diseases and Jurisprudence | 27 | 25 |

In discussing the report, the President of the Confederation pleaded for its adoption as sure to raise the standard of medical education and ethical standing. Dr. Kornderfer, of Philadelphia, then said that the old recommendations with regard to better preliminary education for medicine had already stimulated medical examining boards to the raising of their standards. The adoption of these new suggestions will undoubtedly have a like effect.

The report was unanimously adopted.

Reports were then read by Dr. F. A. Larue, of New Orleans; by Dr. S. B. McGayran, of Cadiz, O., as to the effects of recent medical practise acts passed in their respective States, showing that much has been accomplished, though much still remains to be done. Dr. E. L. McGehee, of New Orleans, then read a paper showing that the examining boards of the country have, besides their own work, done much to raise the standard of medical education and can do much more if the medical profession will prove sympathetic with their efforts.

## ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

*Thirteenth Annual Session, held at New Orleans, May 4, 1903.*

The President, Dr. Wm. L. Rodman, in the chair.

**President's Annual Address.**—After the approval of the minutes of last year's meeting at Saratoga, Dr. Wm. L. Rodman read the President's Annual Address. He said that if the Association of American Medical Colleges is to have its proper effect it must undertake more complete inspection of medical schools. The membership requisites must be made higher if the better class medical schools are to be retained. Above all the decisions of the judicial council of the Association suspending members must not be set aside as in the past.

All medical schools should be required to charge some minimum amount for tuition. This should not be less than $100 per annum, and the amount should be collected, and not too easily charged off against services or supposed services. The abuse of so-called free scholarships must also be regulated.

**Higher Standard Needed.**—The Association must advance its standard. This will not work against the smaller colleges as has been thought. It has not in the past, and at the present time students realize the clinical advantages of the small college and the opportunities for personal teaching more than ever. There are too many medical schools, more in one city of the United States than in the whole of the great Empire of Russia. If there should be a reduction of the number of medical colleges it would be for professional good. The profession is now overcrowded and more and more students proportionately are taking up medicine every year.

**Preliminary Education.**—The requirements for this should be made ever higher and higher. At present we should demand at least a diploma showing three years of study in a high school—to be made later a four years' diploma. Very little allowance should be made for previous training except the special biological training that is practically a more complete development of the faculties of accurate observation, so important for students of medicine.

**Recommendations.**—At least four terms of seven months' each should be required. Midyear examinations in writing should be required of all. This is now the custom in literary colleges, and will be of excellent service in keeping medical students at work. These examinations should serve to weed out low-grade students before their senior years. The senior examinations are, as a rule, severe enough, but the preliminary examinations are often scarcely more than a farce.

On motion, the recommendations of the president were referred to a committee for consideration.

**Medical Education Advancement.**—Dr. Dodson, of Rush Medical College, said that the recently created committee of the American Medical Education, so far as he understands, is about to accept the standard thus created, and will eventually recommend that all its members should have this education. There are now 6,000 graduates in medicine every year. It is a misfortune to let men take four years of medical training without a proper basis, when it will be so hard for them to become successful practitioners afterward.

Dr. Dodson then presented the following amendment, introduced by the special committee appointed for the purpose of revising Article III of the Constitution: It is moved to amend Article III by striking out all of it and inserting in lieu thereof, the following:

Article III, Section 1.—Every College holding membership in this Association, shall demand of each student, as a minimum requirement for admission to the medical course, either (a) a diploma from a four years' high school or academy whose credits are accepted by an approved university; or, (b) the diploma of a state normal school having a course of instruction equivalent to a four years' high school course whose credits are accepted by an approved university; or, (c) a certificate of admission to the freshmen class of a state university or of a college whose credits are fully recognized by an approved university; or, (d) an examination in the following branches: (A) English—grammar, rhetoric and composition, the equivalent of two years' high school work in this branch; (B) Algebra—to quadratics; Latin—one year high school work, including grammar and four books of Cæsar, or a full equivalent therefor; (D) Physics—one year of high school work, including some laboratory work; (E) U. S. History—one year of high school work.

Besides the above, seven additional branches of the students' choice selected from the following: (1) Latin—one year; Cæsar; Cicero, or Virgil. (2) German—one year; grammar and literature. (3) French—one year; grammar and literature. (4) Chemistry—one year; with laboratory work. (5) Botany—one year. (6) Zoology—one year. (7) Geometry—one year; plane. (8) Geometry—one year; solid. (9) Trigonometry—one year. (10) Astronomy—one year. (11) Physiology—one year. (12) Physical geography—one year. (13) English literature—one year. (14) Advanced algebra—one year. (15) Civics—one year. (16) General History—one year.

Sec. 2.—This examination must be conducted by members of the faculty of a literary or scientific college, or by a city, county, or state superintendent of public instruction; in no case shall it be conducted by any person connected with the faculty of a medical school to which the student is seeking admission.

Sec. 3.—A student may be allowed to enter upon his medical work conditioned in not more than two branches (one year's work in each), but these conditions must be removed by satisfactory examination before he is allowed to enter upon the second year of his medical course.

Sec. 4.—College members of this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of their course.

Sec. 5.—Candidates for the degree of Doctor of Medicine shall have attended four years' courses of study, each annual course to have been of not less than seven months' duration, and at least twelve months shall intervene between the beginning of any course and the beginning of the preceding course.

Sec. 6.—Time credits may be given to students who have the necessary entrance requirements and who are graduates or students of colleges of homeopathic or eclectic medicine for such courses of instruction of the required duration as they have successfully fulfilled, excepting in the course of the fourth year, provided they pass satisfactory examinations in materia medica and therapeutics. Credit for one year of time may be given to students holding the degree of A.B., B.S., or other equivalent, from a reputable university or literary college.

Sec. 7.—A college which gives less than a four years' course of study, but does not graduate students and is possessed of other required qualifications may be admitted to membership.

Note.—One year's work in any subject of a high school or academic course is defined to mean a series of daily recitations, of forty-five minutes or more in time, for each week of a school year of not less than thirty-six weeks.

This amendment was seconded by the following colleges: medical department of the University of Buffalo, Johns Hopkins University Medical School, medical department of Western Reserve University, medical department of the University of Michigan, Rush Medical College in affiliation with the University of Chicago, Northwestern University Medical School, Medical Department of the University of Minnesota, medical department of the University of Iowa, medical department of the University of Kansas, medical department of the University of California.

Dr. Wathen, of Louisville, in a majority report recommended that time be allowed for studies done, but these be replaced by special elective studies without any shortening of the course. This will do away with the temptation to shorten the course without real reason.

On motion, the report of the committee was received, and after discussion it was decided that its provisions should not have full binding force for three years, so as to allow of proper preparation of intending medical students for the change.

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**Alcohol and Muscular Strength.**—When taken in small quantities in the fasting condition, and when as a sequence of individual constitutional conditions, the store of bodily strength is to a certain degree exhausted, alcohol, according to L. Schnyder has a favorable effect on the muscular power. This favorable action, however, is inferior to that of a nutriment of equal caloric value.

## THE AMERICAN MEDICAL ASSOCIATION.

*Fifty-fourth Annual Meeting, held at New Orleans, May 5 to 8, 1903.*

(Special Telegraphic Report.)

### Preliminary Session, May 4, 1903.

A preliminary meeting of the House of Delegates was called to order by the President, Dr. Frank Billings, who insisted on the provisional nature of the meeting, the first regular meeting to be called at 8 on Monday evening. He called for reports of several committees, but a few only were taken up.

**Prophylaxis of Venereal Diseases.**—This committee presented a lengthy report, adding practically nothing to this old world-wide discussion, and modeling its report largely on the report of the Brussels Conference, as reported in the Medical News of last September.

**Scope of Work.**—The scope of the work which the committee had set before itself consisted at first in corresponding through its secretary with medical men and philanthropists, with the view of gathering such information and suggestions as they may have had to offer. This step, however, did not seem productive of what the committee considered helpful hints. It did not elicit new facts and only gave occasion to ventilate different and uncompromising views, which, while proper before an assembled body like a congress, did not open new avenues to aid the committee in its preliminary work.

In looking for another more promising basis for its studies, the committee has very keenly felt the utter want of statistics from boards of health, etc. There was absolutely nothing on which to build, or from which to draw conclusions. While other contagious diseases are controlled and combated by boards of health with great vigor and excellent results, venereal diseases are ignored by our sanitary authorities, and the morbidity therefrom is consequently not a matter of record; officially, there are no venereal diseases in these United States.

There remained only one other source of information, viz., the utilization of the records of the different municipal and general hospitals in the larger cities of the Union. But this task would have needed a large clerical force and a substantial appropriation to cope with. It was, however, tried tentatively in many instances and proved futile.

The returns were utterly disproportionate to the number of inquiries sent out; but, had they all replied, as will be seen later, the statistics therefrom would not have proved of great value. In most general hospitals, venereal diseases are not treated; or, if so, those cases figure under different names, pertaining to the late manifestations of these diseases. This had been the experience of the Committee of Seven appointed by the Medical Society of the County of New York in 1901, for the study of measures for the prophylaxis of venereal diseases. Furthermore, the imperfect records, the various designations and omission of diagnosis and other necessary particulars for fairly definite statistics would have made it illusory to draw conclusive statistics. These sources, while they yield interesting deductions, do not represent the amount of venereal diseases treated in the public institutions.

The committee then decided to enlist the help of the medical press of the country, and to this end issued a circular letter, with a request to support the movement.

The committee embraces this opportunity to extend publicly its thanks to the medical journals for the readiness with which the appeal was given place in their columns, either in extenso or in abstract. Without their powerful aid, surely a movement like this must fail; with their cooperation, it has a good chance to succeed.

**Status of Question in Different States.**—Simultaneously with this move and in order to ascertain any laws in regard to prostitution and free treatment of venereal diseases, your committee drafted the following questions and assigned to each member a division of the United States, so that every State and Territory was covered. The following questions were asked of the different States: (1) What laws exist in the different States relating to prostitution? (2) Is there a sanitary marriage law which provides for medical examination of the contracting parties? (3) Is there any law against wilfully or knowingly communicating venereal diseases? (4) What, if any, municipal regulations exist in any city of your State regarding these diseases? (5) Is notification required of these diseases in your State?

Up to the time of completion of this report, twenty States have responded, and many more are confidently expected to do so. But even from this limited number, the utter lack of laws to combat venereal diseases can be ascertained.

The following is a summary of the returns from the States which have responded, viz.: Arizona, Connecticut, Colorado, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, North Carolina, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Virginia, West Virginia, Washington, Vermont.

Each of these States, with the exception of Rhode Island and Connecticut, has, in answer to question 1, the usual laws and sundry police regulations of general character against houses of ill fame, including specified nuisances therein against soliciting in streets, and against enticing of females under 16 years. To questions 2, 3, 4 and 5, the answer in all instances as far as relating to venereal diseases is negative.

It is gratifying to note that this circular letter elicited a number of responses from physicians, medical associations and health officers. Through the latter source, we could ascertain that, independently of the general State laws, some municipalities have their separate local laws or ordinances regarding the social evil.

The fact that States and municipalities in most instances have different laws on this question, as is the case in several States, made the task of gathering reliable facts one of great difficulty.

**General Conclusions.**—The dire consequences venereal diseases do not only affect the working and earning capacity of the people, but also their well being. The well being of the people is encroached on not so much by the active incidents of these diseases, but much more through their chronic manifestations, especially in women. The tedious and invalidating course of chronic pelvic inflammations, their painful and ever-recurring accidents diminish the exercise of motherly care of the children, forces to relative or absolute inactivity the helpful mate. The working capacity being thus diminished, of course, the earning capacity suffers also, and the type of an ill-nourished, careworn and poverty-stricken family is established. And as poverty and squalor are the stranglers of morals, virtue in the children takes its leave, the demon alcohol takes possession of the despairing husband and father, and mute resignation and despair dulls the sensibilities of the wife and mother. It has been approximately determined that among the communicable diseases in Prussia, typhoid represents a yearly money loss of 8,000,000 marks, while the increased expenses and decreased income caused by venereal diseases amounts to 90,000,000 marks yearly, an amount which supersedes that caused by consumption. But the financial loss is of minor importance compared with the enormous social danger, and consequent social misery. Gonorrhea, especially its latent form, destroys the procreative functions in both sexes; in men through chronic inflammation of the adnexa, causing a zoospermia and necrospermia (and further stricture and ascending inflammation of the kidneys). In women through most serious involvement of the pelvic generative organs and their adnexa, destroying fecundity and giving rise to mutilating surgical operations. Eighty per cent. of all deaths from pelvic diseases in women are due to gonorrhea. Twenty per cent. of all blindness is due to gonorrheal infection of the newborn. Fifty per cent. of all involuntary childless marriages are caused by gonorrhea of the female organs of generation, of which 45 per cent. are due to marital infection by men. Taking this view of the existing conditions, the mooted question of "race suicide" so eminently emphasized of late as a voluntary cause of barren marriages, finds its explanation in a quite unexpected but entirely natural, if even in not quite as voluntary a way as was generally presumed. The original source of this gonorrheal infection is traceable in about 70 per cent. to prostitutes, and as 80 per cent. of all men had had gonorrhea once or several times, the conclusions reached are obvious. While almost every prostitute must be looked on as infected with gonorrhea, compilations have shown that about every fourth disseminates syphilis. This means syphilis is about four times rarer than gonorrhea. But, notwithstanding, it stands higher in its fatality. With lessened morbidity it unites a more profound activity in the visceral organs; it is always a constitutional infection with a high mortality and transmissible through heredity. In contradistinction to gonorrhea, it can be acquired also in a non-venereal way. In countries of inferior culture, it is disseminated in nine-tenths of all cases in an extragenital way. Syphilis insontium is acquired in about five per cent. of all cases. It causes abortion in from 60 to 80 per cent., and propagates this tendency up to the third generation. Marital infection takes place in about five per cent. of syphilitic women and from 60 to 80 per cent. of this is due to prostitution.

There are, according to some authorities, 150,000 syphilitics in Berlin, or 12 per cent. of the inhabitants; in Paris, from 13 to 18 per cent. In Copenhagen, 1 of every 55 young men of the age between 20 and 30 has syphilis and 1 in 8 has gonorrhea. In the City of New York the number is estimated to reach 200,000. The same ratio holds good with very little oscillations in every capital or large city.

**Prevalence of Venereal Disease.**—An approximate idea of the prevalence of venereal diseases can be gotten from the records of the various armies. There, from a body of men living under almost similar social conditions and with every case duly reported, the morbidity from venereal diseases can easily be ascertained. Although very valuable, these statistics, however, do not elucidate conditions in the great mass of the population.

As to the armies, these are the figures per thousand: Germany, 27; Russia, 43; France, 44; Austria, 65; Italy, 71; Great Britain, 204. (Parliamentary Report, July 15, 1897, made by the Earl of Dunraven.)

The admission rate for the whole army of the United States for 1901 was 133.97 per 1,000. In the Philippines, those diseases have increased materially in their prevalence. In 1901 they constituted 20.42 per cent. of the total sickness, as compared with 8.97 in 1900. In consequence of this dire condition, medical inspection of the troops at regular intervals and reglementation of the prostitutes has been instituted there. The navy of the United States, *i.e.*, the force afloat, participated with 112 per thousand, against 119.7 of the German navy. A much more reliable statistic, because embracing the whole population, can be gathered from Sweden and Denmark, where, since 1874, venereal diseases are among the reportable contagious diseases. Physicians there are held to make weekly returns. Every venereal patient is obliged to have himself treated and treatment is given gratuitously. Statistics there show that since 1887 the number of venereal diseases has diminished 34 per cent. In the Dukedom of Braunschweig, where every hospital is open for those afflicted with venereal diseases, constitutional syphilis has greatly diminished in proportion to other venereal diseases. The latest and most original departure to ascertain the prevalence of venereal diseases was instituted by Prussia. By request of the Government, all venereal diseases coming into treatment on the 30th day of April, 1900, had to be collected by physicians and their reports returned for statistical purposes. It appears, then, that on this day there were in the Kingdom of Prussia 40,920 venereal patients under treatment. (Seventy-five per cent. males and returns and in consequence of other errors the real number of 25 per cent. females.) Among which were 11,000 cases of recent syphilis. But since, only 63 per cent. of all physicians made venereal patients on this day would amount to 64,000, making a yearly aggregate of 773,000 and possibly more venereal patients. This means that in Prussia three-quarters of a million people are afflicted yearly from venereal diseases; or that, out of 22 adults, 1 becomes infected every year. By computation, it has further developed that in Berlin, among men who marry after their 30th year, every one had gonorrhea twice and every fifth was infected with syphilis. These are appalling numbers and far outdistance even consumption.

**Hospital Facilities for Treating Venereal Diseases.**—Finally, the hospital facilities of different countries for the treatment and care of venereal diseases is very inadequate.

In Prussia, every twenty-ninth venereal patient is admitted to the hospital. The other twenty-eight must either content themselves with dispensary treatment or fall into the hands of quacks. In all Germany only seven per cent. of venereal diseases are admitted to the hospitals.

The main cause of this dereliction lies everywhere in the insufficient supply of hospital facilities and that most general hospitals do not admit venereal patients, or only occasionally so; and in the contemptuous and unkind treatment of patients so afflicted. The poorest accommodations, the meanest food are given them and no wonder that they try to avoid the hospital terror. London has one general hospital bed for each 1,000 of its population. New York, one bed for each 5,000. London treats 88 per cent., New York only 9½ per cent. of its infectious diseases in hospitals. In order to effectually cope with venereal diseases, London ought to have for its 6,300,000 inhabitants about 2.500 beds for venereal patients, and Greater New York, with its 3,500,000 inhabitants, at least 1,800 beds at its disposition. In the northern countries of Europe where venereal diseases are classed among the reportable ones, and gratuitous treatment and generous hospital facilities are within reach of every one, venereal diseases have greatly diminished. Stockholm is in the enviable position of having more beds than needed (366), and complains only of the lack of polyclinics for outdoor patients. In Hungary, the treatment of sick prostitutes as outpatients is strictly forbidden and hospital treatment required; transmission of venereal diseases is made punishable. Punitive legislation against wittingly communicating venereal diseases is in existence in Norway, Denmark and Finland. The countries of middle Europe have no such laws yet. The foregoing fragmentary statistics will convincingly prove that venereal diseases stand next to tuberculosis and alcoholism, if not superseding them. They are permeating the very root of the population, as 15 to 20 per cent. of adult males are infected with syphilis, and about 80 per cent. of them had gonorrhea, tainting those yet unborn, maiming those born with the virus already in their blood, deteriorating the race, devitalizing the individual.

**Report of Business Committee.**—Dr. H. N. Moyer, of Chicago, presented a preliminary communication as to the work of this committee. The only feature that they would wish to introduce was a further sub-division of the work of the house by a larger reference of questions to standing committees to be considered and then presented to the Committee of the Whole, the house, for adoption and final passing. This would expedite very wonderfully the vexatious questions of interest. The house would convene at 8.30 A.M., and its members could then attend the regular meetings of the Association. The house then adjourned until 8 P.M.

**Report of the Board of Trustees.**—At 8 P.M. the House reassembled and the first order of business was the report of the Board of Trustees. Dr. T. J. Happell, of Tennessee, responded. Among other topics touched upon in this report the following attracted special interest.

**Code of Ethics.**—"To avoid the possibility of an unnecessary expense, the Editor was directed not to print and send out, as he has done for several years, the "Code of Ethics" to medical students, in view of the fact that a special committee has under consideration a revision of the code, and are to report at our next annual meeting. As changes may be made, we thought it would be better to await the action of the House of Delegates on the matter, and then have copies of the code printed."

**National Incorporation.**—"In regard to the question of a national incorporation, which would permit the American Medical Association to meet in any State or Territory in the Union, to transact and complete its business without being compelled to hold an adjourned meeting in Illinois for the purpose of ratifying its acts done at the place of meeting, your Board of Trustees has considered it at much length. Much correspondence has passed and repassed between interested parties and various members of the board. All felt that if such an end could be attained, it certainly should be done. At our annual meeting the secretary of our board, Dr. Montgomery, arranged much of this correspondence, and presented it to us on the afternoon of the first day. The attorney, Mr. Baldwin, who had been advising with us, being present, by request, took part in the lengthy discussion of the question. At the end of the session, he was requested to take the correspondence, arrange and go over the same, and furnish an opinion which could be employed by the board as an explanation, should it decline to proceed in accordance with the requests made for them to act in this matter of national incorporation. We can arrive at no better way of presenting this matter so that it may be fully and clearly understood than by giving to the House of Delegates, and, through you, to the whole Association, Mr. Baldwin's report verbatim. The substance of this opinion is: (*a*) That the constitution and by-laws adopted at St. Paul had no binding force at all until they were readopted in Illinois; but the action had at Saratoga, and readopted in Chicago, is binding, and the charter and by-laws under which we are now acting are legal, since they were readopted in Illinois, where the Association is incorporated. (*b*) That a national incorporation is an impossibility."

This report was referred to the Business Committee.

**Scientific Research.**—Dr. A. Stengel, of Philadelphia, presented this report recommending the appropriation of $100 to each of the five series of investigators, as follows: Drs. N. Evans and F. J. Otis on Blastomycetic Infections; Dr. G. F. Ruediger on Streptococcus Infections; Dr. J. T. Moor on Relapsing Malaria and Its Latency; Dr. A. T. Wetherby on Pathology of Sweat Excretions.

Referred to Board of Trustees.

### FIRST DAY—MAY 5, 1903.

#### GENERAL SESSION.

**Addresses of Welcome.**—The meeting was opened with prayer by Rev. H. G. Davis. After this a hearty welcome to New Orleans was accorded by the Mayor, Hon. Paul Capdeveille, who announced his readiness to grant a personal welcome all the more since he had recently been the recipient of notable benefits from members of the profession. Hon. Leon Jastremski, representing the Governor of Louisiana, then extended a hearty welcome and the freedom of the commonwealth to the medical visitors within its borders. These addresses of welcome were responded to by Dr. J. A. Witherspoon of Nashville, Tenn., the first vice-president of the Association, who expressed in felicitous terms, that caused cheer after cheer, the feelings of the members at the hearty welcome extended to them. Dr. Isidore Dyer of New Orleans, the Chairman of the Committee of Arrangements, then called the attention of the visiting members of the Association to the older social events so new to them, and calculated, therefore, to be the source of much pleasure.

**Presidential Address.**—Dr. Frank Billings, of Chicago, then delivered the president's annual address (see page 865).

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## SECTION ON PRACTICE OF MEDICINE.

### FIRST DAY—MAY 5TH.

**Chemical Medicine.**—The proceedings of the Section on Practice of Medicine were opened by the reading of the chairman's address by Dr. Wm. Sydney Thayer of Baltimore. Dr. Thayer's subject was Observations on the Teaching of Chemical Medicine. He said that one hundred years ago, when the United States was enlarged by the Louisiana Purchase, there were only three medical schools in the country, one at Philadelphia, one at Harvard, and one at Dartmouth. Notwithstanding the supposition that medical education was at a low ebb, Dr. Thayer declared that students were required to take three years of preparatory reading of medicine with a physician and spend two full terms at a medical school, besides giving satisfactory evidence of having had a college training or at least good preliminary education. Deterioration of ideals came later, and within twenty-five years there were medical schools graduating physicians after one year's attendance or after two terms of evening classes, so that at times a car-driver graduated into a physician without a break.

**Laboratory and Bedside Teaching.**—In the matter of laboratory work the training given by our medical colleges is satisfactory, but in chemical pathology it is weak. The practice of having students as continuous assistants in hospitals in this country is practically unknown. In England six months of such service is required before graduation, while in France the student must pass the mornings of two years at this work. There is a feeling in this country that such a practice might work to the detriment of the patients. This is false, however. As a matter of fact, more assistants are needed in hospitals now for the detailed, exact study of patients. As this is mainly routine, students may well be employed to mutual benefit. The experience at Johns Hopkins under Prof. Osler has demonstrated this, and what is needed now in the medical teaching of this country is a more liberal employment of the clinical facilities that are at hand.

**Examination of Unstained Blood.**—Dr. G. Lenox Curtis, of New York, described certain unusual conditions that may be recognized in unstained blood when examined microscopically. Fibrin in various forms indicating rheumatism, and gouty tendencies may be seen. Tuberculous material and indigestion corpuscles may also be recognized. Dr. Curtis is able to differentiate many forms of disease in this way and by a process of ozonation of the patients, to treat them successfully. He exhibited microphotographs of the various appearances described and demonstrated the process of ozonization by means of currents of high potential.

In discussing Dr. Curtis' paper, Dr. Weber said that the photographs presented showed only one thing, viz., extreme lack of knowledge of the technic of blood examinations. The pathological appearances shown might readily be produced from the blood of any individual in the room if only enough inattention to their ordinary precautions of blood work were exercised. Much can be learned from unstained blood, and the late Prof. Virchow never studied blood in any other way, yet made important discoveries, but Dr. Curtis' discoveries are of artefact appearance.

**The Boy's Venereal Peril.**—Dr. Ferd C. Valentine, of New York, entered a plea that the growing boy should be taught the true significance of venereal diseases, as physicians now know it. This should be given at two periods, first, at puberty, either by the father or the family physician, and later, when the boy first goes out of the family life to be more or less independent. Physicians must realize their duty in this matter, for medical knowledge has grown while the popular ideas as to the comparative harmlessness of venereal diseases have remained unchanged.

Dr. Jas. J. Walsh, of New York, said that it was undoubtedly the duty of universities to furnish this kind of information to their students. Young men by attendance at universities are brought into all the dangers of city life. They should be given the safeguards of a knowledge of the physical evils of venereal diseases. Faculties that do not make some provision for this are neglecting a serious duty. The medical members of university faculties should bring all their influence to bear so as to insure this needed teaching. At the university of Berlin a course on the significance of venereal disease, open to all the students, is supported out of the German Emperor's private purse and is very numerously attended. Our objections to such a course are founded on pusillanimous prudery.

Dr. Robbins, of Michigan, said that there is danger of teaching young boys too much, so that their curiosity is aroused. At the college age, however, it is an injustice to allow boys to go without this precious knowledge.

Dr. DeLancey Rochester, of Buffalo, said that his information might be imparted during the high-school period if teachers of physiology could be made to teach the subject properly. There is in it room for much good more than in the present method of avoiding the evils of tobacco and alcohol.

**Continued Fever Neither Malarial Nor Typhoid.**—Dr. T. J. Happell, of Trenton, Tenn., said that there is undoubtedly a third, continued fever apart from malaria and typhoid fever which comes frequently under the observation of Southern physicians. The fever is uninfluenced by quinine, even when carried to the extent of mild cinchonism maintained for some days. Remissions amounting to intermissions occur on the last days. The attack lasts from four to six weeks. Cold stages occur day after day. There is no feeling of fever, but the thermometer shows its existence. The pulse corresponds to the fever more than in typhoid fever. There is no tendency to diarrhea, but rather to constipation. The tongue is not typhoid, and mental and nervous symptoms are very infrequent.

**Southern Fevers.**—Dr. Wm. Kraus, of Memphis, Tenn., said that as the result of autopsies made in anomalous cases of fever it had become clear to him that there was no true atypical form of fever in the South, that is, none that might not be explained as due to typhoid or malaria or paratyphoid or to some form of intestinal toxemia. In one case of diagnosed pernicious malaria the autopsy showed extensive congestions pointing to sunstroke and the history of the case sustained this conclusion while there were no plasmodia in the blood. In another case suspicion of sunstroke led to the decision not to give quinine, which is always dangerous in such cases. In one case of anomalous fever, the patient proved to be having the paroxyms of malaria during the night when they passed unnoticed.

**Mountain Fever and Typhoid.**—Dr. J. N. Hall, of Denver, Colo., said that mountain fever is gradually becoming rarer as a diagnosis according as more careful observations of typhoid are made. Typhoid fever in mountainous regions presents some peculiarities, but in most ways it does not differ materially from the same disease at lower altitudes. Dr. Hall's experience with regard to pregnancy during typhoid is not so unfortunate as that generally reported. In his experience neither mother nor child needs necessarily be placed in great danger of life. In recent cases with rational therapeutics both mother and child have survived.

**Typhoid Fever and Fasting.**—Dr. R. M. Harbin, of Rome, Ga., reported the clinical observations of 90 cases of typhoid fever with but four deaths, the principal therapeutic measure insisted on being fasting. Severe sthenic cases of typhoid fever have their active symptoms which are apt to be so exhausting that the patient is relieved sooner and better by absolute abstinence from food than any other method of treatment. Gelatin prevents too rapid emaciation and seems to be soothing to the bowels. Where hemorrhage threatens or has actually occurred, gelatin should be freely used. When diarrhea is a prominent feature of the case fasting must be insisted upon. When vomiting is severe, especially at the beginning of an attack, this is also the most effective remedy. Under a fasting regimé the course of all cases of typhoid is shorter, and many so-called abortive methods of treatment owe whatever virtue they possess to the absence of irritation of the intestinal lesion by fecal matter.

In discussion, Dr. Thomas B. Futcher, of Baltimore, said that at times the treatment of continued fever by coal-tar products gave rise to sweating periods, chills and a very irregular temperature chart that might lead the observer astray as to the character of the disease. Some times these remedies are taken without the advice of physicians at the beginning of the case, especially, and produce anomalous appearances.

Dr. James Tyson, of Philadelphia, said that while anamolous cases of continued fever frequently came under his observation, careful investigation always brought them under one of the ordinary heads, typhoid fever, malaria, paratyphoid, or some enteric condition, producing fever. It is the tendency of clinical experience to lessen the number of types of disease. Dr. Tyson's experience with pregnancy complicated by typhoid fever has been better than the usual text-book declarations. Three patients at the University Hospital have been carried successfully through their typhoid fever without the loss of the fetuses. One healthy child has been born, and the outlook for carriage to term in the other patients is good, since their fever is now over.

Dr. I. L. Van Zant, of Fort Worth, Texas, said that after forty years of experience he feels that the so-called slow fever of the South is only a mild type of typhoid fever. A slow pulse with a high temperature is almost pathagnomonic of typhoid fever. Often anomalous symptoms in typhoid fever are due to disturbances of the digestive tract, and when a foul breath indicates this, Dr. Van Zant has found that acetozone will correct the symptoms.

Dr. Witherspoon, of Nashville, Tenn., said that there is certainly some fever different from malaria or typhoid in the Southern States. Three years ago he suggested for this type the name toxenteric fever. It does not occur at any special season, nor affect any age by preference, it does not protect against second attacks. The fever is very irregular. The high point is not always in the afternoon. The temperature chart reminds one of a septic condition, yet the affection is not very serious. The tenderness is apt to be in the left iliac fossa rather than the right. Constipation rather than diarrhea is characteristic of the disease; patients retain their appetites. Instead of lethargy, irritability is the rule. Patients are very troublesome, anxious and restless. Herpes labialis, unusual in typhoid, is very common. The tongue is quite different from that of typhoid. There are no rose spots. The affection may be paratyphoid fever, but it certainly is not true typhoid.

Dr. Mason, of the U. S. Army, said that in all cases carefully investigated in the army service, the plasmodium or Widal reaction was ultimately found. Two or three cases of paracdon fever were recognized, and in one case the disease proved to be Malta fever. No new type of fever is needed to explain the affection.

### SECOND DAY—MAY 6TH.

**Heart Weakness and Dilatation from Nutritional Causes.**—Dr. G. W. McCaskey, of Fort Wayne, Ind., called attention to the low myocarditis that may occur as a consequence of lowered nutrition. Very little may be found microscopically beyond slight interstitial or fatty or pigmentary degeneration, yet the action of the heart muscles is distinctly interfered with. The rise of blood-pressure consequent on even slight exercise may cause such a heart to labor and even initiate dilatation of the heart cavities. All the persistent anemias cause such a dilatation and chronic gastro-intestinal disease partly from lowering of nutrition and partly from spasm of the arterioles may cause tendencies to cardiac dilatation. The indications are not for direct treatment of the heart by cardiac tonics, such as digitalis, but by improvement in the general condition to cause favorable alteration in the metabolism of the heart muscles.

**Limitation of Non-surgical Treatment of Intestinal Obstruction.**—Dr. Joseph R. Eastman, of Indianapolis, said that much more harm is done by waiting too long before operation, when there are threatening symptoms of intestinal obstruction than by subjecting the patients to the risk of operation. The exact diagnosis is often impossible until the abdomen is actually opened. Exploratory laparotomy should be undertaken much more freely than is at present the case. Morphine only serves to mask the symptoms and deceive the physician while bringing the patient and friends into a false sense of security. The danger is in delay rather than in operation. Whenever symptoms are sudden of development there should be no hesitation in securing, as soon as possible, the surgeon. When the symptoms are more gradual, treatment by means of large injections may be continued for some time until assurance is obtained that the condition is not really one of fecal impaction, which so often simulates true obstruction with strangulation.

**Strongyloides Intestinalis in the United States.**—Dr. M. L. Price, of Baltimore, detailed the history of this filarial worm, which was first described by Normand in 1867. In recent years it has come to be associated as a causative agent with the special dysenteric disease known on the China coast and also in the Philippines and in Japan as Cochin China diarrhea. Like the uncinaria or *Anchylostoma duodenale,* this was first observed in Europe in the stools of laborers in the St. Gothard tunnel. Since then it has been found in many countries, especially in the tropics. The first cases observed in the United States were in the service of Dr. Wm. S. Thayer, of Baltimore, and he studied the life habits of the worm. Dr. Price has recently had a case of disease under observation, and has been able to add some details to our knowledge of the subject. His patient has suffered from chronic diarrhea for five months often having ten to twelve motions per day. There had been periods of relief followed by exacerbations that were most discouraging. The case would have been considered some years ago as a chronic diarrhea of persistent type but without any suspicion of a parasite as the cause.

**Life History of the Parasite.**—The worm is about three-tenths of a millimeter in length, and four-hundredths in breadth. It is covered by a clear zone of quasi-gelatinous material, all the protoplasm within this envelope being granular in character. When the worm dies the granular appearance becomes exaggerated, and even the clear envelope shows granules. The worm is constantly in motion. This motion seems to be part of its vital activity, and makes up for the lack of the cardiac vascular system of other animals, there being no such mechanism in the worm. The parasite exists in two forms, the parthogenetic mother worm and the rhabditiform or walking-stick-like embryos. Infection with the worm causes a dysenteric affection, which may be complicated by attacks of severe diarrhea with collapse and nausea resembling cholera. Not long after infection takes place the patient begins to suffer from anemia, which becomes more and more pronounced, and is out of proportion to the disturbance of nutrition. It has been attributed as in the case of the uncinaria to some poison secreted or excreted by the parasite which is absorbed into the system. Strongyloides are often associated with uncinaria so that some of the symptoms attributed to it may really be due to its companion parasite.

**Frequency and Treatment.**—Dr. Price said that undoubtedly this parasite is much more frequent in this country than has been thought. Besides Dr. Thayer's cases Dr. Stiles, of Washington, D. C., has found the parasite unexpectedly in five cases where its presence was utterly unsuspected. As to treatment, nothing definite has as yet been decided upon. On theoretic grounds, because of its action on uncinaria, thymol has been suggested. Dr. Price administered large doses of thymol, about 100 grains, in his case, and numbers of embryos came away though the patient had been fasting for a day, and there were none of them in the stools before. These embryos had somewhat lost their motility and were beginning to shrivel from the action of the thymol. A week later thymol was once more given. For a time the patient improved, but later suffered a severe relapse.

**Distribution of Cochin China Parasite.**—Dr. Chas. W. Stiles, of Washington, D. C., said that undoubtedly the parasite of Cochin China diarrhea is widely distributed in this country. Besides his five cases three have been found in California, and others along the Gulf States. Rhabditiform embryos are not uncommon in water and vinegar. These have no connection with strongyloides, yet may be found in the stools. The pin worms, too, have ova viviparous embryos that may be taken for strongyloides. The diagnosis then must not be made from one or two chance small filiform worms in the stools. The parasite may be expected to occur in our southeastern and Gulf States, but as it is very common in the Philippines, and as soldiers will now be returning from there to all parts of the country, it may turn up almost anywhere.

Dr. Allen J. Smith, of Galveston, Texas, said that the strongyloides are surely very common in our lower tier of States. They may be found as at Galveston in occasional patients without diarrhea or anemia or other symptoms.

Dr. A. P. Ohlmacher, of the Ohio State Insane Asylum, reported the finding of this parasite in an epileptic who had been closely confined for several years, and who had suffered from diarrhea for only three months before his death.

(To be Continued.)

## SECTION ON SURGERY AND ANATOMY.

### First Day—May 5th.

**Exploratory Operations.**—Dr. James E. Moore, of Minneapolis, in his address said that it was difficult for one of the older men to realize what changes would come in the near future as a result of new and improved methods of medical education. The young surgeon of to-day and of the future has of necessity a more difficult duty to perform because he stands face to face with facts which to his predecessors meant relatively little. The pelvis lent itself so favorably to bimanual investigation because of the numerous channels leading therefrom that it might almost be considered a superficial portion of the body, and in consequence had been most thoroughly worked over. The territory of the upper abdomen, however, in which were organs of even greater vital worth was as yet a relatively unknown field. There were few methods of microscopic or chemical types which lent themselves to the definite establishment or early diagnoses of these parts and the positive proof of such diagnosis often meant life or death to the patient. In the last five years in which had occurred an awakening in the surgery of the pancreas and of the gall-bladder the ethics of exploratory incisions into this region had occupied a prominent place in the thoughts of all abdominal surgeons. He concluded that without exploration diagnosis was impossible, with exploration made by a moral and highly trained man all things were possible.

**Suppression of Urine.**—Dr. H. J. Whitacre, of Cincinnati, was called to the bedside of a young woman who had induced abortion upon herself, by the use of ergot and the sound. She had a temperature of 104° F., which was relieved by an intra-uterine douche. After using all known methods of treatment he split the capsule of each kidney. The organ looked like the congested face of an asphyxiated fetus. On sectioning the capsule the parenchyma popped through the incision, indicating tremendous pressure from venous congestion. The patient passed urine one hour after operation and her recovery was almost immediate. He believed that this type of suppression was of vasomotor origin and that the woman would certainly have died in the absence of surgical intervention.

**Fat Necrosis of the Kidney.**—Dr. J. R. Guthrie, of Dubuque, Iowa, said that fat might be formed from albuminoid matter as well as in other ways physiologically, but that the cause sof fat necrosis in any organ and particularly in the kidneys were not understood. Whether it was due to the action of certain bacteria or from the presence of peculiar physical limitations, certain it was that occasionally one came across cases which seemed to show that the latter factors alone might suffice to produce absolute parenchymatous destruction. These changes consisted in diminished blood supply due either to a narrowing of the vessel by deposit, or by tortion, to a diminished supply of oxygen, to persistent venous congestion. Profoundly displaced kidneys present these physical anomalies and it is not improbable that a number of the cases of liquefaction of the parenchyma of the organ may be attributed directly to physical causes.

**Surgical Treatment of Nephritis.**—Dr. A. H. Ferguson, of Chicago, said that he published the history of two cases of interstitial nephritis, which had been confirmed as such by Klebs more than a month before the appearance of Dr. Edebohls' paper. He, therefore, claimed priority for the operation.

Dr. A. D. Bevan, of Chicago, opened the discussion. He said that too little attention had been given to the intricate problem of aneuria. He divided it into obstructive, reflex and nephritic. The first is always surgical, the second may be. He considered decapsulation as utterly useless, but held that great good might be done by a generous nephrotomy.

Dr. Jepson, of Iowa, said that Edebohls was not the originator of the decapsulation technic. There could be no doubt that the operation was valueless in tubular nephritis. In the interstitial form it might do good.

Dr. A. McLaren, of St. Paul, said that the relief obtained in certain cases of nephralgia was due to the splitting of the capsule, not to its separation.

Dr. R. Guiteras, of New York, believed that this operation for chronic Bright's disease had not yet been performed often enough for any one to express positive opinions. Johnson, of California, had shown there to be no increase in the blood supply of normal kidneys which had been decorticated.

Dr. Ferguson, in closing, said that no important deduction could be made from observations upon the kidneys of dogs because these, being normal, did not need the blood supply which was consequetly withheld.

**Indications for Cholecystectomy.**—Dr. B. B. Davis, of Omaha, said that there were two main reasons for preferring this operation to cholecystostomy. In 20 per cent. the relief is only partial, in about 25 per cent. fistulæ persist for a long period. Less than one per cent. of cholecystectomy cases continue to have pain and fistulæ are unknown. There were a few cases in which the more radical operation was contraindicated; these were chiefly in association with profound sepsis.

**Operations on the Gall-Bladder.**—Dr. F. A. Dunsmoor, of Minneapolis, said that there would be no occasion to use any but very simple methods in dealing with all the organs of this region if only an early diagnosis could be made. This was and would continue to be impossible save by an explanatory incision.

Dr. W. J. Mayo, of Rochester, Minn., in discussing these papers, said that much judgment must be exercised to determine whether to drain or to remove the gall-bladder. He had formulated the rule to ablate the organ whenever a stone occupied its pelvis or the cystic duct. These cases could be closed without drainage because by so doing there was no danger of inducing a sudden back pressure of bile on the liver. This was the most frequent cause of death. In all these cases there should be free and easy passage for the bile.

Dr. J. B. Murphy, of Chicago, said that overlooked stones and flexions of the cystic duct were the two causes which led to a return of symptoms after cholecystostomy. Removal was not so safe as drainage.

Dr. Oschner, of Chicago, spoke of the difficulty of making positive diagnoses in all but the few cases of cholelithiasis which present classic symptoms. Gastritis' is too often the sole symptom presenting. He favored cholecystectomy, but drainage was in many cases safer.

### Second Day—May 6th.

**Surgery of Gastric Ulcer.**—Dr. Van Buren Knott, of Sioux City, Iowa, said that it had not until very recently been recognized that a great many of the obstinate dyspepsias and cases of intractible gastric irritability were due to the formation of adhesions between the stomach and surrounding viscera. Since gastric ulcer is in about 80 per cent. of cases situated near the pylorus, fully as great a proportion of adhesions exists in that neighborhood. The symptoms of this condition are essentially vague. They may, however, rarely become so serious as to produce severe pain or even endanger life. These adhesions interfere with the normal downward displacement of the stomach which should take place after eating. They further limit the degree of peristalsis, thus not alone producing pain from traction but producing direct mechanical interference with digestion. He had attempted to differentiate the symptoms which arise from adhesions situated in different parts of the stomach wall, but later concluded that the operator might be fortunate if he were able definitely to conclude that adhesion existed. The most prominent symptoms being a fixed point of tenderness, an irregularity of gastric outline when inflated, and marked pain from the knee-chest position. Those adhesions, which are frequently encountered between the abdominal wall and the anterior portion of the stomach, when broad and dense should be left alone, a simple gastro-enterostomy being indicated.

**Pyloric Obstruction.**—Dr. H. D. Niles, of Salt Lake City, Utah, said that ulcer, inflammatory adhesions or malignancy produced 95 per cent. of pyloric obstructions. In the benign conditions three-quarters of the sufferings are due to the dilation and consequent diseased condition of the stomach mucous membrane resulting from the closure of the pylorus. A great deal is to be expected in the near future from timely operations, which, because done early, can be of a radical kind. Adhesions unquestionably produce the physical conditions of malnutrition best calculated to result in ulceration, and an early recognition of their presence will not alone prevent the formation of ulcers, but avert the appalling series of well-known sequelæ. He said that the diagnosis could be reached only through the early employment of exploratory incision and concluded that because of the relative safety of operations performed both before the patient had lost his strength and prior to the establishment of grave pathological lesions in the stomach, the near future would produce a technic so simple, so curative and so safe that a vast number of lives would be saved.

**Stomach Surgery.**—Dr. A. J. Ochsner, of Chicago, said that we were on the verge of simplifying gastric surgery to an astonishing degree, because we will shortly be able to operate upon the cause rather than the sequelæ, as is now the case. Gastric ulcer is the fountain of practically all surgical diseases of the stomach, of hemorrhage, of perforation, of peritonitis, of carcinoma, and of many more. The reason that it is safe to reach this conclusion is because of the tremendous improvement in operative technic, and because enough cases are now under observation to enable us to speak with assurance of the permanent good results of conservative gastric surgery. Not the least important has been the discovery by Mayo that the vicious cycle so fraught with danger had been entirely annulled by the simple method of using the most dependent part of the stomach for making the anastomosis. Pyloroplasty has not as yet been satisfactory, because it fails entirely to remove the obstruction and the dilated walls of the stomach are unable to drive the fluids uphill, and consequently the condition which the surgeon has endeavored to relieve is only mitigated. Gastro-enterostomy properly done in cases unable to stand the better operation of partial gastric resection will be the operations of the future. Protogastrectomy will remain always a rare, because unnecessary operation. The after-treatment of gastric cases consists in rectal feeding for two weeks, in the use of predigested food by mouth after the fourth day, in gastric lavage, only a half pint of water being used.

In opening the discussion Dr. Andrews, of Chicago, asked what were the indications for operation in these cases. Simply stomach trouble in the anemic hysterical patient, who must be sent to one who will drain the foul stink-pot of a stomach by gastro-enterostomy. This is the panacea, not the ovary. the hemorrhoid or the appendix. Dr. Mayo, of Rochester, Minn., said that to-day the surgery of gastric ulcer is unfortunately that of its sequelæ rather than that of the primary lesion. In what way can we take steps to educate ourselves to the treatment of gastric ulcer before it has gone on to perforation, to hemorrhage and to the formation of malignant growths. To cut them out is most difficult because of the annoying ease with which they escapė the most careful search. Fortunately most gastric ulcers lie to the right of the point at which we should do gastro-enterostomy, therefore this relatively simple operation gives relief and is indicated in the majority of cases. This is true incidentally of the 12 per cent. of so-called gastric ulcers which are really situated in the duodenum, and which naturally could never be found in the stomach by any amount of search. Of course the ideal operation is extirpation, and this safely may be a partial gastrectomy because of the fortunate distribution of lymphatics in the stomach, those draining the pylorus not passing to the dome of the stomach. This may accordingly be left, while the entire lesser curvature must always be cut away.

Dr. Rodman, of Philadelphia, said that excision of the ulcer would come when the technic became more perfect. The statement that multiplicity of ulcers contraindicates partial gastrotomy is not of great weight. He had not yet succeeded in doing away entirely with the vicious cycle and believed that Mayo's technic would not in all cases prevent it. Dr. Ochsner said that when the extremist got the general practitioner educated to the point of understanding, that the bulk of surgical ills took origin in gastric ulcer and that this condition was curable by early and safe operation, there would be very little work for the gastric surgeon to do.

**Circular Enterorrhaphy.**—Dr. O. B. Campbell, of St. Joseph, Mo., described his new technic, as follows: A knife is run around the gut and through the mesentery, cutting down to the submucosa. The cuff of the external coat is then turned back. the mucosa is next cut out and the ends sutured together. The cuff is then rolled back over these sutures and sutured to the serous surface of the bowel.

He reported upward of 75 cases on dogs with one death from failure of the technic. The pathological reports were most gratifying and surely showed the union to be complete.

In discussing these papers, Dr. A. F. Jonas, of Omaha, cited the following points as paramount for successful intestinal work. The approximation of the mesentery segment must be absolute, no knots should exist outside the lumen. The mend must be air and water-tight. The Connell suture fulfills these requirements better than any other.

**Multiple Osteomyelitis.**—Dr. J. T. Bottomley, of Boston, stated that this condition is one of extremest rarity, occurring almost invariably in children, and due to invasion by the staphylococcus. He cited a case of an adult, forty-three years old, in which practically all the bones of the extremities and some of ribs underwent absolute destruction. The patient was operated upon again and again, but finally succumbed to the advancement of the pulmonary focus, which had been the source of supply for the different infections.

**Osteomyelitis.**—Dr. E. H. Nichols, of Boston, said that the process was usually checked by the epiphyseal line. Bone is reformed from the periosteum as well as from the endosteum. The important points in his paper were the recommendations that the medulla be left intact, that the operations be divided into three groups, that in most cases the larger part or the whole necrotic shafts should be removed.

Dr. Willard, of Philadelphia, in opening the discussion, said that every case of acute osteomyelitis needed as prompt care as appendicitis. It was not so much treatment, but the decision to treat which needed to be taught.

Dr. J. B. Murphy, of Chicago, said that every case of acute osteomyelitis should be recognized and operated upon within forty-eight hours. It was to be differentiated from acute rheumatism by the temperature, by the tenderness of bone to prolong deep pressure, by the absence of effusion into the joint, and by the lack of swelling. The source of infection was always close to the epiphyseal line, and it usually bursts through to become subperiosteal at the end of forty-eight hours. After that the surgeon is only secondary value to the patient.

Dr. Nichols, in closing, was unable to agree with Dr. Murphy that the diagnosis should always be made. He felt that there are unquestioned cases associated with profound toxemia, which are almost impossible to differentiate from typhoid fever.

**The Treatment of Vascular Tumors by the Injection of Boiling Water.**—Dr. J. A. Wyeth, of New York, has found water preferable to wax or alcohol, and that it was indicated in the three types of vascular growths, but found its best use in those of the cavernous venous type. He has, however, successfully used it in a dreadful case of cirsoid aneurism of the scalp. He showed the syringes with which he did the work.

**Umbilical Hernia.**—Dr. Wm. J. Mayo, of Rochester, Minn., reported 35 cases of this condition with but one relapse after operation. He said that from now on he should make the flaps from above downward because in that position the more the patient strained the tighter did the mend become.

Dr. Ochsner said that it was surprising that an operation which yielded as high a percentage of cures in this hitherto practicably incurable malady as did Bassini's operation, should as yet have been ignored by the writers of text-books. It succeeds because it produces one-tenth the trauma of other methods and restores the full strength of the body wall.

Dr. Murphy said that the reason the old operation killed so many people, was that the sudden increase in tension interfered with the action of the heart and lungs, and resulted in pulmonary edema.

**Enterostomy for Peritonitis.**—Dr. F. B. Lund, of Boston, said that paralytic distention of the bowel is a complex phenomenon caused by a variety of conditions. He stated that the technic was indicated only in cases in extremis, whether the bowel was distended by reason of paralysis or of obstruction low down. It was a life-giving emergency operation to be performed under cocaine.

Dr. Martin B. Tinker, of Philadelphia, in discussing this paper said that at the Johns Hopkins Hospital the procedure of iliostomy had for some time been looked upon favorably. He was certain that in a small percentage of cases it had saved life. The only contraindication to its employment was the pain due to the excoriations about the wound. These were conveniently treated by keeping the patient permanently in a warm bath. All their fistulæ had healed without secondary operation.

(To be Continued.)

## SECTION ON OBSTETRICS AND GYNECOLOGY.

### First Day—May 5th.

**President's Address.**—Dr. A. Palmer Dudley, of New York, made a most happy speech of welcome and thanks to the members for having elected him as their President. The subject of his address was a plea for a more conservative method of operations upon the diseased female organs. He showed most conclusively that ever since he first began to operate with this in view, in 1887, that his efforts have been followed by most gratifying and successful results. Altogether he has operated upon 269 of such women, 45 of whom have become pregnant. He reported that there were in the literature more than 2,000 cases operated upon by eminent men all over the United States, and that he had letters from these men which corroborated all the claims that he had made for conservatism. The neurologists of to-day were reaping a rich harvest as a result of the almost criminal eagerness with which the female organs had been removed by surgeons twenty-five years ago. Premature menopause with its concomitant serious and distressing symptoms, was appalling in its great numbers as a result of these honest, but mistaken operators. He showed that over ten per cent. of the women upon whom he had operated conservatively had borne children.

**Appendicitis from the Standpoint of the Gynecologist.**—Dr. H. P. Newman, of Chicago, remarked that in the generality of cases of appendicitis one experienced little or no trouble in making a diagnosis, but ofttimes there came a case where it was hard to differentiate between appendicitis and pyosalpinx. Our forefathers were wont to call appendicitis by a variety of names, such as perityphlitis, gastric fever, congestion of the bowels and what not. To-day we are more likely to confound pelvic trouble, such as pyosalpinx, oophoritis, etc., with appendicitis. The vital symptoms in such conditions are relative to peritonitis. Peritonitis produced in the course of an appendicitis is always fatal; whereas a peritonitis in the majority of cases is not fatal if produced in the course of a pyosalpinx. In every case where the abdomen is opened for pelvic trouble, it is just as well that the operator explores and examines the whole abdomen. In every instance the appendix should be most carefully examined, and its removal depends both upon the gynecologist and the condition of his patient. If the appendix contains any sort of a concretion or is adherent to the ovary, or if there is a catarrhal condition present, it should most certainly be removed.

Any localized peritonitis might cause intestinal obstruction. Although the operator found that the appendix was healthy, but adherent to any of the pelvic organs, it would be his duty to remove it. The operation of choice for the author in appendectomy has been the invaginating one.

Dr. E. Reynolds, of Boston, said that it was not always easy to explain the symptoms by the examination of the patient. He did not advise indiscriminate operation, but thought that it was just as well to wait until the symptoms were of such a degree that operation was absolutely necessary to relieve the distress of the patient. Whenever there was a localized tenderness on the right side with flatus and mucus in the dejector, a diagnosis of chronic condition of some sort in the appendix was assured. The time has passed when we can afford to hesitate in the removal of the appendix, although we of to-day remove more appendices than our fathers did, our sons will undoubtedly outstrip us in this worthy cause.

Dr. E. Ricketts, of Cincinnati, thought that it was not always easy to differentiate between appendicitis and salpingitis in such cases. Cases where the appendix is attached to the tube and ovary do not necessarily produce attacks which were due to appendicitis.

Dr. P. Michinard, of New Orleans, considered that the chief point of interest to the gynecologist was not the operation, or the method of operation, but how one might make a differential diagnosis between appendicitis and salpingitis on the right side.

Dr. J. H. Carstens, of Detroit, remarked that in appendicitis the uterus was movable. One could not get pain over McBurney's point in salpingitis. Very often the cecum was in the pelvis and there one might get an appendicitis of the pelvic variety and no pain over McBurney's point. He made it a rule to remove the appendix whenever he thought its condition warranted it, provided the patient's condition was such as would permit the increase of time produced by an appendectomy.

Dr. Newman, in closing, said that the object of his paper was not to bring out the various methods of operation, but to make the operator more keen in the observation of the appendix while performing pelvic operations; that it should be the duty of every operator to use his own judgment as to whether an appendix should be removed and not to have any hard and fixed rule concerning the removal of this organ.

**Gastric Ulcer.**—Dr. A. H. Cordier, of Kansas City, in reading this paper, said that if there exists in the stomach an ulcer, one should be very careful to put the organ at rest, just as he would in carrying out a line of treatment in inflammation of an organ or member in any part of the body. Chronic ulcers he found more frequently upon the posterior wall of the stomach along the lesser curvature. This he realized was in variance with statistics on this subject. Fortunately for patients, ulcers on the posterior wall were less liable to bring them to autopsy because the stomach is more likely to become adherent in this region to the organs near it and in case of perforation the contents of the stomach do not escape into the abdominal cavity, but are walled off from it. Ulcers of the anterior wall perforate into the abdominal cavity into which the stomach empties its contents and death results. Such being the case, it results in statistics showing that ulcers more frequently occur on the anterior wall. Healing of gastric ulcers often produce constrictions in the organ.

When the ulcer attacks a large blood-vessel the hemorrhage resulting causes death. These cases are not usually operable, but die before the surgeon can intervene. Ulcers of the pylorus are liable to cause obstruction and consequent dilatation. Adhesions to the liver produced dilatation of the stomach. Gastric ulcers were not found to be most common in young girls as statistics have shown in the past. During menstruation all signs and symptoms of ulcer of the stomach, pain, tenderness, bleeding, and vomiting are exaggerated. Vomiting is not preceded by nausea, but is without effort and occurs about fifteen minutes after the patient has taken in food. It is an alarming fact that quite a little over ten per cent. of cancers of the stomach, especially the pylorus, may be traced to the existence of a former benign ulcer. The author reported a case where a healed ulcer had produced stenosis of the pylorus. He had used in all of his cases the Murphy button and considered it harmless, inasmuch as in the case reported the button had fallen back into the stomach and remained there seven years without producing any symptoms whatsoever. Although medical treatment might in fifty per cent. of the cases and more give good results, there remain those cases in which it was not satisfactory. Then it was that he deemed it necessary to use operative measures for the cure of this condition. The operation that he advised was gastro-enterostomy.

Dr. J. H. Carstens, of Detroit, in discussing this paper, remarked that cases of pyloric obstruction of any cause is most satisfactorily cured by operation. He did not use the Murphy button, but the McGraw elastic ligature.

Dr. J. G. Clark, of Philadelphia, considered that there were but two questions of importance in gastric ulcer, first, how long should the case be treated medically? In his opinion this should be entirely left to the judgment of the expert medical man. Second, how can we find the ulcer? If the ulcer was a posterior one, it could be easily made out by an exploratory gastrotomy. Having located the ulcer it was suggested that the operation might be performed through the gastric wound, and the suturing of the ulcer would be performed within the stomach cavity.

Dr. Cordier, in closing the discussion, remarked that he did not deem it advisable to operate during an alarming hemorrhage as the patient would most certainly die upon the table. The proper thing to do was to operate by any method which would give the result in the shortest possible time, hence he employed the Murphy button. The chief object in doing the operation that he advised was to produce drainage in the stomach by gravity alone, therefore he made his anastamosis on the anterior wall.

### SECOND DAY—MAY 6TH.

**Infected Gall-bladder Contents.**—Dr. E. Ricketts, of Cincinnati, said cholecystotomy was the best operation that could be employed in this condition until free drainage was obtained. This was a primary law in all methods and surgical operations. Three-fourths of the cases of this variety were found among women. The number of stones present did not add to the gravity of the case. The chief bacteria were the typhoid and the colon bacilli. The gall-bladder can be infected without involvement of the duct, which might be patent, but the patient would die. Rupture occurred and a diagnosis of the case is made by the passage of gall-stone through the duct, but the flexion of the bladder upon the duct held the bile within the bladder. The bladder might form a fistulous connection with the duodenum. Jaundice was always a serious complication. Biliary fistulæ were not so common as the profession had been led to suppose. It was better to incise the duodenum over the diverticulum, and to push the stone back into the gall-bladder when you could not push it forward into the duodenum. The operation of cholecystotomy could be done under a local anesthetic. Cases which recovered by means of medication alone were very rare.

Dr. S. H. Dunning, of Indianapolis, in discussing this paper, said that the most important thing in these cases was to know when to operate and how much should be done in cases of empyemia associated with stone. Stone impacted in the duct gave intermittent jaundice. In many instances it is better to drain the bladder and let the stone alone. It was not often necessary to open the duodenum, but better to open the common duct and drain it. The mortality was 75 to 80 per cent.

Dr. A. P. Dudley, of New York, said that where infection was present in the gall-bladder aspiration was indicated, and if the bladder contained pus it should be washed out with a solution of formaldehyde 1 to 2,000. He advocated drainage. As there was no contractile power in the blood-vessels, one was very likely to get hemorrhage.

Dr. Ricketts, in closing, said that it was not the ordinary operation that worried one, but what was to be done in an emergency. No emergency would arise if the family doctor had promptly recognized the symptoms which had been present for some time. It was in these patients that abscess of the liver occurs, and these were most difficult to deal with.

**Better Methods for Repair of the Perineal Structures.**—Dr. H. O. Marcy, of Boston, said that for many years there had been no general acceptation of any one method of procedure in these cases. Injuries of the perineum vary from rupture of the hymen to complete tear through the rectum. In operating successfully the sphincter must be dilated and the septum made tense by the fingers in the rectum until the beginning of the incision. The posterior one-third of the vagina is separated over the rectocele and not simply dissected off. The vulvar opening was restored by this operation, and even the hymen might be reproduced if necessary. Urine should be drawn off the first day.

Dr. Graham, of Indianapolis, presented a most interesting modification of the Emmett operation, which he felt most perfectly restored the relations of the lacerated perineum.

Dr. Gibbons, of Scranton, said that Dr. Marcy's operation was usually sufficient to cure all cases.

Dr. Marcy said, in closing, that he had found his operations to be perfectly satisfactory in all cases, and that the patient that had been operated upon thirty years ago, had borne children, and a short while ago he had found her perineum to be intact.

**The Repair of Cystocele.**—Dr. E. Reynolds, of Boston, said all operations were not satisfactory, in the writer's mind, for the cure of this condition, because they did not presuppose that this was a condition comparable to a hernia in any other part of the body, and as such it should be treated. The useless sack should be excised and the edges brought together. Those older operations that obtained, the lateral and longitudinal increase of tissue would do if they were deepened. The writer described his operation in detail and said that it would cure any case of that variety. Dr. Reynolds, in closing, said that there was a transverse narrowing of the vaginal wall while the anterior wall was markedly elongated. This condition approached nearest of all to nature.

**Lacerations of the Cervix.**—Dr. D. H. Craigs, of Boston, said that two years were a minimum time to observe the results of this sort of operation. The operation should only be resorted to after all palliative treatment had been tried. Eighty-nine of the 100 cases with which he had communicated after operation had been improved, and more than 50 of them had been cured. The operation did not tend to produce sterility. Forty-nine of these cases had become pregnant and all but eight had gone on to full term. These had aborted either artificially or naturally. Relaceration was not a contraindication to the operation. Women past thirty-five years are more permanently benefited than others as they did not work so hard and were less likely to bear children.

Dr. Marcy, of Boston, believed that the reason of failure in these cases was that the nervous symptoms had not been cured and that the proper medical treatment had not been employed previous to operation. The operation which favored failure was chronic metritis. Dr. Holmes, of Chicago, said that every woman when she gave birth to a child, had some sort of a laceration of her cervix, but this only became pathological when symptoms were set up. Symptoms were those resulting from lacerations in general.

Dr. Craig, in closing, said that he did not believe cervixes should be operated upon indiscriminately, but if symptoms were severe and local treatment did not relieve them operation was indicated.

**The Hygiene of Young Girls.**—Dr. J. H. Carstens, of Detroit, remarked that neurasthenia was a condition which might be transmitted from mother to daughter and fostered in the child by the mother to that degree which would make the child a genital invalid for life. This might be avoided in the majority of instances by the proper conduct of the girl's life during the period of puberty, especial care being taken to protect the child from unhealthy surroundings, occupation and improper method of eating and dressing. The mother should protect her child against the frivolous occupations of society. The training of the young girl was the most difficult problem before the gynecologist. Sterility was often the result of neglect. The laity in general were opposed to the examination of young women. The young had an equal right with the old to be cured. Almost all female troubles can be cured if not prevented by the early treatment of them. Neglect might cause destruction of the tubes and ovaries. Rectal examination was the method of choice except in rare instances.

Dr. Bonifield, of Cincinnati, said that young women should always be examined under an anesthetic, but that the operator should be prepared to do any operation which might be found to be required during course of the examination.

Dr. Carsten, in closing, said that it was best to avoid examining young women as much as possible less they be too deeply imbued with the fact that they possess those organs of which they should remain in ignorance as long as possible.

Dr. Lawrence remarked that it was most important for the gynecologist to realize that cystitis in young women was rare and when present was associated with pelvic disease.

**Fixation of the Prolapsed Kidney.**—In this paper Dr. A. H. Goelet, of New York, the author, remarked that belts and corsets were totally inadequate if the kidney had descended below the costal margin. When the colon became distended it dragged the kidney down and belts did no good. He advised an operation by means of which the kidney was drawn up under the edge of the ribs and retained there by sutures for three weeks, at the end of which time the sutures were withdrawn.

Many members of the society commended this operation, and some, especially Dr. Dunning and Dr. Ricketts, said that in view of the fact of the author's 169 cases of complete success, that the operation was perfection.

**Combined Clinical and Laboratory Study of the Effects of Peritoneal Saline Infusions in Abdominal Operations.**—This paper was read by Dr. J. G. Clark, of Philadelphia, who said one-half c.c. of a boullion culture of the *Staphylococcus aureus* into the abdominal cavity of 25 rabbits without the use of any salt solution and that all of these animals had died within 24 hours, with signs of intense infection. Twenty-five other rabbits were similarly injected, but in these one quart of salt solution was also injected. The investigators were able to save these animals in almost every instance, hence the author still held to the views that he had set forth in his previous paper, two years ago, at St. Paul.

**Retroversion of the Uterus.**—Dr. L. H. Dunning, of Indianapolis, based his paper upon the study of 112 patients in private practice, only eight of whom had uncomplicated retroversion. The symptoms are more often the result of complication than of the displacement.

**Operations upon the Uterosacral and Round Ligaments for Retroversion of the Uterus.**—Dr. J. Wesley Bovée, of Washington, D. C., made a further report on this operation. Forty-one patients had been subjected to it since the reading of his former paper with satisfactory results.

(To be Continued.)

## SECTION ON PEDIATRICS.

First Day.—May 5th.

**Development of Children.**—The chairman, Dr. J. C. Cook, of Chicago, spoke of the hospitality of the city and the welcome accorded to the members. The important question of how to save the lives of the children that they might grow to manhood was one of the most practical in medicine. The gradual modification of the body of the fetus and the variation in the water of the cells was one of the first great developmental modifications, and suggested the weakness of the young. State care was necessary to prevent the premature employment of minors and on this subject he gave many important figures and dwelt particularly on the control of vicious parents by law. Over 100 years ago Peel insisted on the vicious influences of child-labor and English legislators made wise laws. Practitioner should aid the lawyer and protect the minors by framing wise national sanitary laws, which by the appointment of commissioners can be enforced.

**Anatomical and Physiological Correspondence of Child and Adult.**—Dr. Wm. T. Eckley, of Chicago, pointed out a number of important developmental variations of the child from the adult. These related particularly to changes in temperature, breathing, circulation, nasal sinuses, and myelination of association fibers in brain. Development of pneumatic bones made changes in voice in adults and also increased the danger of infections in these. The author dwelt upon hernias in their relation to development. Myelination of sheaths in nerve fibers is important from pedagogic standpoint. Idiosyncrasy is the survival in the adult of the normal susceptibility of stimulation in the child.

**Is the Study of Pediatrics Worth the Attention it Gets, and Does it get the Attention it Deserves?**—Dr. C. F. Wahrer, of Fort, Madison, Iowa, said that it is to be expected that one working in pediatrics as an exclusive specialty should devote more attention to it than the general practitioner, as it is natural for one to magnify his specialty, but the existence of the pure pediatrist is hardly possible outside the greater cities. Consequently the practice among children receives insufficient attention throughout the greater part of our country. The young practitioner struggling for a foothold in any community cannot do better than address himself to work among babies and children, since, if he is worthy, he will surely win the confidence and respect of the mothers, and as the children grow older he is established as their family advisor. It is astonishing to note that diseases of children should not receive more careful attention at the hands of the general practitioner, since it comprises not less than half of his routine work. Surely pediatrics deserves vastly more consideration than is commonly accorded it.

**Acute Suppurative Cervical Adenitis of Infancy.**—This subject was discussed in a paper presented by Dr. T. S. Southworth, of New York. The affection, he said, was peculiar to infancy, and resulted from the absorption of infectious matter through the lymph channels of the nasopharynx. Its onset is sudden, attended by a rapid rise of temperature, followed by diffuse swelling, extending from the ears down the sides of the neck. Suppuration under the usual methods of treatment is to be expected. A continuation of the fever, particularly in the very young, is unfavorable. The prime object of treatment should be the limitation of further absorption of septic material by cleansing the nasopharynx, and putting it in as nearly an aseptic condition as is possible. Should these abortive measures fail to arrest the suppurative process adequate drainage should be established by an incision made with a view to leaving as little cicatricial disfigurement as may be.

(To be Continued.)

## LATE NEWS FROM NEW ORLEANS.

Atlantic City, New Jersey, has been selected as the place of meeting for the American Medical Association in 1904. The changes suggested by the Committee on the Revision of the Code of Medical Ethics appointed at the Saratoga meeting, 1902, were considered and finally adopted by the Association.

## THE FOURTEENTH INTERNATIONAL MEDICAL CONGRESS.

*Held in Madrid, Spain, April 23 to 30, 1903.*

[Specially Reported by Cable for the Medical News.]

(Continued from Page 861.)

## SECTION ON MEDICINE.

Prof. Lorand, of Carlsbad, read a paper on Diabetes, Acromegaly and Basedow's Disease, in which he spoke of their related pathogenesis. Diseases of the vascular glands are often associated with the glycosuria of Basedow, and glycosuria is invariably associated with hyperactivity of the thyroid body as in chlorosis, poisonings, lactosurea and pregnancy. Thyrodine produces it. Marasmus, myxedema and heredity syphilis are never associated with glycosuria. True atrophy of the thyroid is rare in infancy.

**Discussion.**—Dr. Castillo, of Madrid, agreed with the points made by the reader as did also Dr. Parkinson. Prof. Lorand said that diabetic patients were improved by the supervention of conditions producing thyroid atrophy, as cancer or tuberculosis of the thyroid. An antibacterial function was inferred from the action of the gland *in vitro*. Hypertrophy was rarely present in tuberculous abscess. The gland swells in infections. Secondary thyroid atrophy in marasmus produces an indurated edema like myxedema and there is a similar loathing of meat.

**Clinical Forms of Hyperchlorohydria** was the title of a paper presented by Dr. Thorena of Madrid. The condition is a symptom of some functional, organic or constitutional disease. Its treatment is unsatisfactory and chiefly symptomatic, and relapses are frequent. The diet should be albuminous with no condiments. Alkalies are useful and gastroenterostomy may be required in severe cases with myasthenia, dilatation and inability to diet. Dr. Marogliano of Naples protested that the condition was invariably functional and subject to nervous influences. The symptom is controllable medically and operation is absolutely contraindicated. The profession generally overestimates the importance of HCl.

**Luetic Arthritis.**—Prof. Singer of Vienna said that the condition was found in the tertiary stage of syphilis and the process was characterized by torpid thickening of the capsule and periosteum and by exostoses. Its duration was one of years but the functional disturbance was usually slight. The diagnosis could usually be made by the absence of fever, the exclusion of an associated endocarditis or gonorrhea. The best results were obtained from the use of the "mixed treatment."

### SECTION ON PEDIATRICS.

**Artificial Feeding.**—Prof. Concetti of Rome said upon this subject that the artificial feeding of infants was inadvisable but occasionally necessary. The natural milk of the mother is never replaced by a perfect substitute. Sterilization of cow's milk and other artificial foods destroys their susceptibility to the action of the digestive ferments and renders assimilation imperfect.

Dr. Raimondi of Paris had been able to secure aseptic milk for the use of 200 children from birth to two years of age. His method was to have the udders of the cows, and the hands of the milkers thoroughly washed in a 1-1,000 solution of bichloride. The milk itself was subjected to no sterilization or alteration, but was given to the children within 20 minutes after it had been drawn. This plan had met with almost invariable success as no digestive disturbance traceable to the food was found among the infants. General congratulations were offered Dr. Raimondi.

**Scarlatina.**—Dr. Moser of Berlin said that he had used a serum treatment in 142 children. The horses from which the serum was obtained were immunized by a mixture of cultures of streptococci and the heart blood of scarlatina. Seven months were required to complete the immunization. 150 c.c. of the serum produced an exanthematous fever. The use of the serum counteracts the constitutional vomiting, the delirium and reduces the pulse and temperature within one day. Its administration should be begun as early as possible in order to prevent the occurrence of angina nephritis. These complications have been markedly reduced by its use and the mortality lessened one-half. Agglutination of the scarlet cocci is obtained in solutions of 1 to 250,000. Dr. Morfan, of Paris, suggested that cases of scarlatina should be divided into four grades according to their severity. Drs. Latour and Marmorak regarded the serum as useless. Dr. Escherich had had convincing personal experience in its use. His mortality had been lower than that of any other Vienna hospital which did not use the serum.

**Paraffin in Umbilical Hernia.**—Professor Escherich, of Graz, reported his interesting experience with paraffin injection in the cure of infantile umbilical hernia the treatment of which had heretofore been very unsatisfactory. He had introduced the paraffin at the temperature of 113° F. into the sac of small hernia where it cooled and became firm almost instantly. The result was an immediate narrowing of the sac and contraction of the opening. A radical cure had been uniformly obtained.

**Splenic Hypertrophy in Infants.**—Professor Morfan, of Paris, presented a paper upon enlargement of the spleen in infants which he usually regarded as a syphilitic interstitial splenitis. It should be differentiated from the enlargement of the organ accompanying rachitic splenoptosis. If associated with anemia it is safe to diagnosticate hereditary syphilis, despite the absence of other characteristic symptoms.

**Serumtherapy of Typhoid Fever in Children.**—Professor Josias, of Paris, reported this method of treatment as employed by him in fifty cases. Professor Chantemesse said that the benefits obtained from serumtherapy in typhoid fever were very great and no ill effects had so far been observed. It was a rule to inject 1 c.c. for every 70 pounds of the patients weight unless there was evidence of unusual depression, in which condition a diminished dose was desirable. The effects are a reduction of temperature and pulse rate, an abbreviation of the attack with a diminished tendency to relapses and complications and a remarkable improvement of the mortality rate. A mortality of four per cent. had been obtained under this mode of treatment whereas 14 per cent. was the average rate in other Parisian hospitals.

Dr. Varges, of Madrid, expressed himself as favorably impressed with the serum treatment of typhoid fever and said he was experimenting with an anti-pertussis serum. Professor Josias explained that the Widal reaction was precisely the same in children as in adults. Seventy per cent. gave evidence of agglutination before the tenth day and the reaction was equally as marked before the age of eight as afterward, notwithstanding Kasal found four retarded cases among children. The Widal reaction is unaffected by injection of the antiserum.

**Rhinoscleroma.**—Professor Schroetter, of Vienna, said that this, while common in Austria, was never described elsewhere. It must occur in other countries especially in America, as a result of the large Austrian immigration thither. At times it would be found difficult to distinguish it from syphilis or tuberculosis, as it was manifested by nodules, ulcers and cicatrices. Rhinoscleroma is a highly infectious disease and on this account was worthy of governmental inquiry and attention. Professor Garcia, in twenty years' experience as a pathologist, had never encountered an example of the disease in Spain.

**Intestinal Therapy.**—Professor Bernheim, of Paris, has found the stomach frequently intolerant of many drugs administered in gelatine or reratin coatings which often dissolve while yet in the stomach. By experiments he has found that commercial gluten dissolves in the stomach in about two hours, pure gluten in from three to seven hours and in the intestine in three hours. By the addition of a factive resin the physiological dose may be depended upon to pass through the most delicate stomach without irritation.

Professor Brouardel, of Paris, called the attention to the wide use of salicylic acid as a preservative of food. There was annually manufactured of this drug over 150,000 kilograms, more than enough for all of the rheumatics in the world. Salicylic is a weak and supposedly harmless antiseptic. Large quantities are required in the manufacture of beer, and while in medicinal doses it is ordinarily harmless, the habitual consumption of minute amounts may develop a cumulative effect and bring about very undesirable chronic changes. While an occasional drink of cognac may be innocent, a daily glass will pretty surely excite an arteriosclerosis. The elimination of salicylic acid or its salts is rapid in the young but it is likely to be slow and even prolonged for days in the aged or infirm and in pregnant women or young children. The effect of repeated minute doses of arsenic is known to be disastrous to the digestive organs, as well as the nervous system. An epidemic of diarrhea, traceable to arsenic, affecting no less than 4,000 persons was cited. Although arsenic is one of the oldest known poisons, its influence when received in minimal doses may escape detection for months. Cases of nephritis and arteriosclerosis are among the effects of salicylic and boric acid upon the weak. Dogs subjected to experimentation with these and similar drugs soon collapse with diabetic paralysis.

**Immunization of the Human Against Tuberculosis.**—Professor E. Maragliano, of Genoa, said in his address before the general conference that there existed in most individuals a natural immunity against tuberculosis. This fact explains the escape of the large number of persons who are daily exposed to infection. This power of resistance is apparently potent in direct ratio to the standard of good health maintained in the individual. Any decline of the vital strength renders the organism just so much more liable to invasion. The truth of this assertion is confirmed by experimentation upon lower animals and by observation upon the denizens of the tenement districts. The object for which the author had been zealously laboring for thirty years was the establishment of this standard of immunity through improved methods of living and also by the use of an immunizing serum that might be injected hypodermically or perhaps taken by the mouth. Professor Maragliano thought he had made some progress in this direction, as his experiments upon animals had met with sufficient success to justify a trial upon the human.

**The Thalamus.**—Professor Ramon y Cajal, of Madrid, presented a report of his recent studies upon this important part of the cerebral anatomy. As a result of the investigations of a certain German anatomist, together with his own researches, it was now established that the thalamus was connected with certain sensory tracts as well as with the organs of hearing and vision, and had much wider and more important relations than had heretofore been accorded it.

### GENERAL ITEMS.

At the close of the General Session addresses were delivered by representatives of the several nations that had taken part in the Congress. It was regrettable that the committee representing the United States should have been refused admission to the stage at the inauguration of the Embassadors and that our delegate alone failed to deliver his address. In this connection and in explanation of the above-mentioned irregularities it should be stated that the preparation for the accommodation of the scientific and public meetings of the Congress were very inadequate. The Sections were forced to occupy widely separated halls to which there were unsatisfactory means of transportation. Perhaps the most noticeable lack of organization was to be seen in the want of an authoratative bureau of informatoin. Even the committees were unable to tell when or where many of the important proceedings would occur. The social festivities, however, were abundant and enjoyable. Americans especially appreciated the hospitality of Mr. and Mrs. Arthur S. Hardy, the United States Minister to Spain.

**Prizes.**—At the session held in 1897, at Moscow, that city voted, in honor of the Russian meeting, a prize to be awarded for original research. This was unanimously awarded Professor Metchnikoff. A similar prize, donated by the city of Paris, was awarded, after a spirited contest, to Professor Grassi. On the first ballot the votes stood Grassi 42, Roentgen 39, Lavaran 5.

The next place of meeting will be at Lisbon, Portugal, in 1906, with Professor Alfredo da Costa, of that city, as President.

(To be Continued.)

## BOOK REVIEWS.

Mechanical Vibratory Stimulation, its Theory and Application in the Treatment of Disease. By Maurice F. Pilgrim, M.D., First Vice-President of the American Electrotherapeutic Association, etc. Published by Metropolitan Publishing Company, New York.

For some years now there has been a definite impression among medical men that has spread also somewhat to the general public that mechanical stimulation by means of vibration may be of service in the treatment of various nervous and muscular diseases. This little book gives a very full account of the possibilities and the technic of this new method of therapeutics. As is to be expected, perhaps there is somewhat of overenthusiasm in the claims of benefit to be derived from the method, but on the whole the book is a very fair presentation of the new subject. The details of the method are given a thoroughly scientific treatment and there is evidently a definite purpose to be helpful to medical men rather than merely to attract the public attention. The book is therefore deserving of careful reading by those who feel interested in this branch of physical therapeutics.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden, Physician-in-Chief to the City Hospital, Frankfurt a. M. Part III, Membranous Catarrh of the Intestines (Colica Mucosa). E. B. Treat & Company, New York.

Professor von Noorden treats this difficult subject in a very masterly manner. As some of the best original observations with regard to the forms of the disease originate with himself, this little book is sure to be helpful in a very practical way to the physician. His treatment particularly is very detailed, including even the exact quantity and quality of diet advised under varying circumstances, and the monograph concludes with a review of 76 cases that have been reported up to date. In these incomplete success was attained in about 16 per cent., permanent success in 50 per cent., there were relapses in 13 per cent. and failure in only 5 per cent. It is evident that Prof. von Noorden's opinions in the matter deserve to be carefully read.

Memoranda on Poisons. By Thomas Hawkes Tanner, M.D., F.L.S. Ninth revised edition. By Henry Leffmann, A.M., M.D., Professor of Chemistry in the Woman's Medical College of Pennsylvania, Pathological Chemist Jefferson Medical College Hospital, etc. P. Blakiston's Son & Co., Philadelphia.

This book is already so well known that an extended notice of this ninth edition is scarcely necessary. The poisons are classed as corrosives, simple irritants, specific irritants and neurotic poisons, and an appendix relates to bites and stings. It seems strange that atropine should not be mentioned in the treatment of toadstool poisoning. In some cases, as with formaldehyde, digitalis, veratrum, the poisonous dose is not stated.

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## ADDRESS.

### THE DUTIES AND RESPONSIBILITIES OF TRUSTEES OF PUBLIC MEDICAL INSTITUTIONS.*†

BY W. W. KEEN, M.D., LL.D., F.R.C.S. (HON.),

OF PHILADELPHIA;

PROFESSOR OF THE PRINCIPLES OF SURGERY AND OF CLINICAL SURGERY, JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

THE value of occasional and stated gatherings of the principal leaders of medical thought in the various special departments is acknowledged by all. Certainly those who have attended this Congress, now held for the sixth time, have felt its broadening influence. We are all apt to become narrow when we are devoted heart and soul to one specialty, be it medicine, surgery, physiology, ophthalmology, or any other. When we meet nearly all of the more prominent men in cognate interrelated branches of medicine in Washington every third year, we are sure to find that there are as interesting and as important questions in other specialties as there are in our own; and, moreover, we are sure to find that there are men of as acute intelligence, wide reading, and original thought in other than our own departments whom it is our pleasure to meet, and whose acquaintance becomes not only valuable for what we find them to be, but because of the stimulus that they give to our own thoughts.

Ordinarily the Presidential address has been devoted to some special professional topic. My first idea was to select such a subject for to-night, but as I was absent from the country when I received the very highly appreciated notice of my selection, I asked the members of the executive committee for suggestions, being sure that their united judgment would be better than my own. I was very glad when they proposed the topic upon which I shall address you, partly because it is different from the usual type of such addresses, and partly because it seems to me appropriate to the present time. I shall, therefore, give the time at my disposal to presenting to you some thoughts on "The Duties and Responsibilities of Trustees of Public Medical Institutions."

Before entering upon my topic I beg to state explicitly that what I may say is offered in no spirit of unfriendly criticism, but only by way of friendly suggestion. I have been too long and too intimately associated with scores of such trustees not to know that they are almost without exception generous, self-sacrificing, giving of their time and money and thoughtful care without stint and often sacrificing personal convenience and comfort for the good of the college or hospital which they so faithfully serve. Anxious to discharge their trust to the best of their ability, I am sure they will accept these suggestions, the fruit of forty years of personal service as a teacher and a hospital surgeon, in the same friendly spirit in which they are offered.

There are two such classes of institutions to be considered: (1) Medical colleges, and (2) Hospitals, whether they be connected with medical schools or not.

There is, it is true, a third class of trustees for a wholly new kind of medical institution which has arisen as a modern Minerva Medica, born full-armed for the fray. Of this class we have as yet but a single example —the Rockefeller Institute for Medical Research. Akin to it are laboratories for special investigations such as the two Cancer Laboratories in Buffalo and Boston. But the Rockefeller Institute is so recent, and its scope at present necessarily so undetermined, that I would not venture to consider the duties of these trustees, and I am sure their responsibilities are adequately felt by them. Moreover, their admirable selection of a Director for the institution is the best pledge of a future wise administration. I heartily congratulate the Profession and America upon the establishment of so peculiarly useful an institution. Its founder has wisely left its work unhampered saving as to its general purpose, and the whole world, and especially the United States, will soon be his debtor for researches and discoveries that will abridge or even abolish some diseases, shorten sickness, prolong life, and add enormously to the sum of human happiness. Could any man of wealth by any possible earthly gift win for himself a higher reward or a happier recollection when he faces the future world?

Though not a medical institution, I cannot refrain also at this point from expressing not only for myself, but for you, our hearty appreciation of what the Carnegie Institution has done for medicine in the re-establishment of the *Index Medicus*. This publication is essentially and peculiarly American in origin, but its usefulness is worldwide. It aids alike an author in Japan or in India, in Europe or America. It is one of the best and wisest undertakings of this lusty educational giant. But to ensure the permanent publication of the *Index Medicus* the profession must show that it really values this generous gift. Unless the *Index* finds a hearty support in the profession abroad and especially at home, we can hardly expect the continuance of this unique and invaluable publication. May I earnestly ask, therefore, of this audience of the chief medical authors of the United States that each one will demonstrate his appreciation by an immediate subscription to the *Index Medicus*.

There are some matters common both to the medical college and the hospital which may be considered together. The most important of all these is the cordial and hearty co-operation of the medical men connected with the college or hospital and the boards of trustees. In order to ensure this the members of each body must be acquainted with each other. I have known of instances in which if a professor in the medical school ventured to suggest any changes as to its management, or even to state his opinion as to the qualifications of a candidate for a vacant professorship, his suggestions were resented as an interference instead of being welcomed as a means of valuable information. I take it for granted that we should not offer such suggestions after the fashion of a partisan either of a man or a measure, for the advancement of a friend or to the disadvantage of an enemy, but solely for the good of the institution with which we are connected. He who would endeavor to foist a friend upon an institution *because* he is his friend, and in spite of the fact that a rival is the abler man and better fitted for the position, is just as false to his duty, to his college, or to his hospital, as the trustee who would vote for the less desirable man on the ground of personal friendship, or of association in some society, church or other similar body. Of all these influences that arising from membership in the same religious body is, I fear, the most frequent and yet most absolutely indefensible. What one's theological opinions are has no more to do with his qualifications for a professional or hospital appointment than his opinions on protection as against free trade, or whether Bacon or Shakespeare wrote Hamlet.

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* The Presidential Address at the Sixth Congress of American Physicians and Surgeons, Washington, May 12, 1903.

† Published from advance sheets of the Transactions of the Sixth Triennial Congress of American Physicians and Surgeons.

I have always honored one of a board of trustees, who was an old personal friend of my father's and who had known me from boyhood, yet who in my early professional career, when I asked for his vote for an important hospital appointment, had the manly courage to tell me that he thought a rival, who was older and more experienced, was the better man for the place and that he should, accordingly, vote for him and not for me. I confess it was at the time a bitter disappointment to me, but I never had so high an opinion of my father's friend as after he denied me his vote.

There should be in my opinion but two questions asked in considering the election of either a professor or a hospital physician or surgeon. First, which one of the candidates for the place has the best qualifications from the medical point of view? This should include not only his scientific knowledge, but his ability practically to impart or to apply that knowledge. Secondly, are his personal qualifications and character such as to make him a desirable incumbent of the position. It must be remembered that a man may be scientifically and practically an extremely able man, but of such a quarrelsome disposition or the unfortunate possessor of some other similar personal disqualification as to make him a most undesirable member of a staff. The personal equation may be quite as important as the scientific qualification. Of course, his personal moral character should be above reproach. To place a drunkard or a libertine in a position of so much responsibility and influence is to abuse a trust. No patient should be confided to the care of such a man and still more no such man should be made an instructor of young men, upon whom his influence would be most disastrous.

It is often extremely difficult for a layman to reach a correct conclusion as to the qualifications of medical men for college or hospital appointments, because of the confident, yet conflicting statements of their friends. But there is apt to be a certain clear partisanship in such statements which betrays the purpose of the speaker. Especially will this be so if he advocates the election of A or B on the lower grounds of friendship, social position, or for other similar motives. The man who is advocating the best man because he *is* the best man has the stamp of sincerity upon every word.

Perhaps the most striking example I can adduce of such an unfortunate misjudgment is Dr. S. Weir Mitchell, who was denied a professorship in both the medical institutions of his native city, thus depriving them of the most brilliant medical genius that America has produced within my personal recollection. For him it is now a matter of indifference, and for American literature it has been a gain. But for medicine, and especially for physiology, it was an immense loss. Both of his rivals were estimable, worthy gentlemen who held an honorable position in the profession, it is true, but Mitchell is a genius. "Eclipse was first; the rest were nowhere."

One of the best methods of bringing the medical board and the board of trustees into more intimate contact would be to have the dean or a committee of the faculty, or, in a hospital, if the staff is not too large, the whole staff invited to the meetings of the board. Here I can speak from personal experience. At the Orthopedic Hospital and Infirmary for Nervous Diseases in Philadelphia there are three surgeons and three physicians. These members of the medical staff are invited to meet with the board of managers at each monthly meeting, excepting the annual meeting, when the medical staff is elected. They are free to express their opinions on any topic relating to the management of the hospital to which their judgment may contribute something of value, but when a decision is taken they have no vote. It is purely in an advisory capacity and for the purpose of giving and receiving information that they are present. The plan works exceedingly well. When economy is necessary in the hospital the staff is fully acquainted with the fact and can co-operate with the trustees; when expenses have run up from carelessness in the wasteful use of dressings or appliances, a halt is called; when, alas, very rarely, the treasurer is all smiles, and plans for the extension of the hospital, or the installation of some new addition to the plant is contemplated, their knowledge as to the necessity, for instance, of a hydrotherapeutic or an X-ray plant, or a new operating-room is of the greatest possible value. Nothing but good, in my opinion, can come from such personal co-operation.

One of the difficult questions which boards of trustees have to face is whether there shall be a fixed age at which a college professor or a hospital physician or surgeon shall retire from the active duties of his post. I firmly believe that they should fix such a retiring age in the interest of the students and the patients. As age advances a man's opinions and his practice become "as petrified as his arteries." He is incapable of constant study, of adding to his knowledge or of keeping up with the feverish strides of medicine. He ought then to be relieved of his cares and his duties. If no rule exists he is allowed to continue his inefficient or even disastrous work, or by some harsh suggestion is compelled to give place to another more competent man. A rule is a condition accepted when he is appointed, and just as in the army and navy, when an officer reaches sixty-four or sixty-two years of age he is retired on reduced pay, and because it is a rule he does not feel hurt or humiliated; so in a college or a hospital, when time and the rule bring us to the period when we must gracefully retire, no one's reputation is injured or his feelings lacerated.

I have ascertained that the following rules are in force in some of the larger institutions:

At Harvard the age when a professor may request to be retired is sixty, provided he has been in the service of the university for twenty years, with a reduced pay ranging from one-third to two-thirds of his salary. At sixty-six he may be retired by the President and Fellows partly or wholly. The details of the plan are admirably arranged.

At Chicago, while no plan is yet in force, largely, I presume, because of its recent establishment on the present basis, such a plan will soon be made operative.

At Columbia the retiring age, after fifteen years of service, is sixty-five, either at the request of the professor or upon motion of the trustees, and on half pay.

At Yale the retiring age is sixty-five after twenty-five years of service and on half pay, but the retirement is not compulsory. It will probably be made compulsory before long.

At Cornell the retiring age is seventy, but the Pension Fund will not be available until 1914. The retiring pension will then be $1,500.

At the University of Pennsylvania and at Johns Hopkins no retiring age is fixed.

The only hospitals I know of in which a retiring age is fixed are the Massachusetts General Hospital and the Boston City Hospital. At the former the compulsory retiring age of the surgeons is sixty-three, and of the physicians sixty-five. At the Boston City Hospital the visiting surgeons are retired at sixty-five, but the physicians, gynecologists, and all the other medical officers continue in service indefinitely—a very curious anomaly.

These varying, but in the main identical provisions when any exist, show the trend of thought and practice. They generally apply to the medical department, except that in case a professor is engaged in the practice of his profession and so has a private income the provision for continuing a portion of his salary does not apply. This is right and fair. Of course, in all hospitals where there are no salaries, no provision as to reduced salary would obtain.

The point I wish to emphasize is, however, that the age limit (which, in my opinion, should be sixty-five) should be *compulsory* and so not be invidious in any given case. It will be objected that not a few men are in full intellectual and physical vigor at sixty-five, and it will be a detriment to the institution to lose their services when their ripe experience and admirable teaching are most desirable. I admit it. But for every one such case of harm done by compelling a man to stop, there are a score of instances of men who are doing vast injury by their inefficiency. Moreover, in the very few cases in which it might be allowable, as boards of trustees make rules they can unmake them, and in special cases they could pay a graceful compliment and preserve to the institution their exceptional men by extending the limit to seventy years. In no case can I think it wise to go beyond this limit.

In some of the universities I have quoted a sabbatical year of rest or study is allowed a professor. He is put upon half pay and his place is filled by a temporary substitute, who receives the other half of his salary. I believe that in present conditions this should not be applied to medical faculties, for nearly all of the professors are in active practice and take sufficiently long summer holidays. These latter are often spent in observation and study abroad—a most useful and remunerative employment of a holiday—and serve the purpose of the sabbatical year for men whose entire time is given to their teaching. In hospitals it certainly should not apply.

One of the recurring questions in hospital and college management is whether there should be a certain number of doctors on the board. I know that there is a wide diversity of opinion upon this point. My own belief is that a small proportion of well chosen medical men is a distinct advantage in such boards of trustees. I have said a "small proportion," for it should not be, I think, larger than probably 20 per cent.; and I also said "well chosen;" that is, they should be men of large mental caliber and executive ability. It should be distinctly understood, if not indeed absolutely expressed, in institutions in large cities at least, that any physician or surgeon placed upon such a board should never be eligible, even by resignation from the board, for a position on the faculty or the medical staff. In small towns the lack of suitable persons for hospital trustees and members of the hospital staff might make it desirable not to institute such a rule.

Moreover, such medical men should be selected for trustees as by their mental training, social relations, and personal character would be, so far as it is possible for human nature to realize such a position, absolutely free from influences arising from personal jealousy or professional bias. If it were a social club it would be perfectly proper to vote against a man because he is personally distasteful, but where it is a scientific body responsible for the education of large numbers of young men and for the care of still larger numbers of hospital patients among the poor, even if a candidate were personally unfriendly I should vote for his election if he were the man best fitted for the place.

Turning now to the duties and responsibilities peculiar to trustees of hospitals, let me point out the objects of a hospital.

First, the care and the cure of the sick and injured; secondly, the education of medical men and medical students; and thirdly, the promotion of knowledge, which, in turn, will inure all over the world to the more speedy and certain cure of the sick and injured, and so be of the greatest benefit to humanity.

In order to accomplish these three purposes, it is necessary that the hospital shall have sufficient funds to purchase ground, erect buildings, and provide a thorough material equipment. It is a great pleasure to me, as to you also, to note that throughout the length and breadth of the land tne medical and surgical staff never tax the always inadequate resources of hospitals for any remuneration. They serve without pay, they give ungrudgingly and freely day and night, to the poor often for many years, their time and skill, without ever a thought of any money reward. Their reward comes from increased knowledge and skill, and the daily blessing invoked of heaven, often lisped in children's prayers or breathed in mothers' benisons which pass not unheeded by the Recording Angel.

But, as I have pointed out elsewhere, instead of receiving any pay, they give to hospitals. The mere money value of this daily gift of the profession to the poor amounts to an enormous sum. The value of the professional services of the staff of the Jefferson Medical College Hospital, a single hospital in a single city, on a moderate basis of fees, I found was more than half a million dollars annually. The millions upon millions of money given in that most self-sacrificing form —personal service—by the entire profession all over the United States, and I might add with still further pride, all over the world, is simply incalculable. The Gideon Grays and Weellum MacLures are not found only in Scotland or at the countryside. They are even more plentiful in the slums of our great cities giving of their time, their skill, and what is more, their hearts, their lives, themselves to the service of humanity.

Trustees sometimes seem to take it for granted that their duties are ended when they have done two things: begged or given and safely invested the necessary funds, and then elected the staff. To my mind their duties do not by any means end at this point. They should see to it that the resources of the hospital are utilized to the utmost in doing the largest good.

Let us see now how the objects of a hospital, as I have stated them, can be realized. The first object is the care and cure of the patients. But the cure of any individual patient is not the "be all and the end all" of a hospital. His cure must be a means of larger vision to the doctor, who will thus be better fitted to care for future similar cases. Even his death, if he cannot be cured, should minister to the increasing knowledge and skill of the doctor so that he may be able to snatch future victory from present defeat.

The second—the training of doctors and students—is frequently carried out, but sometimes even objected to. There are three classes of doctors who are trained by a hospital: first, the staff of the hospital itself. I have lived through the period of the establishment of hospitals in many of the smaller cities and towns, and in some cases even villages in this country, for it was a rare thing in my early professional life for any except the larger cities to have hospitals. The moment that a hospital is established with its medical and surgical staff, that moment a new era has dawned on the *community* in which the hospital is established. More careful methods are introduced, greater cleanliness is observed, hygienic conditions are bettered, laboratory methods are inevitably introduced in time. Even if the old timers who graduated years before our modern laboratory methods were adopted do not care for them or cannot use them, the young fellows who come fresh from our medical schools and serve as residents, and even the nurses graduated from our training-schools, finally shame the older ones into better ways and greater exactness, not only in the hospital, but in their private work as well.

As a consequence of the establishment of these hospitals and the added skill and training of the local physicians and surgeons the character of the consultations of the physicians and surgeons of our great medical centers has been greatly modified. The really simple cases, such as hydrocele and small tumors (and even large ones), clubfoot, harelip, etc., which used to be sent to city consultants, are now successfully operated on by the local surgeons and only the more difficult, serious, or complicated cases are sent to the cities. This is a great advantage to the patient, whose good is the first consideration, and to the local medical men; and though seemingly a serious loss to the city consultant, it is in the end an advantage, as he must prove his better metal in the higher scientific fields and be, as well as seem to be, the better man.

Moreover, the trustees of every hospital should see to it that a good library and laboratory are provided. Insensibly the staff will read more and more. A single restless progressive spirit, even though it be a young interne, calling attention to this case and to that, in one journal or another, will compel the rest of the staff to read in spite of themselves. It is absolutely clear that a laboratory with modern equipment for bacteriological, pathological, and chemical research in its examination of tumors, of the urine, the sputum, the feces, the blood, the pus, and other fluids from wounds, etc., is a necessity in every hospital. Even many of our smaller hospitals are equipped with microscope and reagents if not with a complete bacteriological outfit, which nowadays is inexpensive and imperative. All of this raises the intellectual and professional standard of the staff. I venture to say that no town of 20,000 people can afford to be without its hospital for the sake of its *own citizens,* utterly irrespective of the good it does to the poor who are treated in its wards. It must be established in the interest of the *well-to-do citizens* and their families so that they may secure better equipped doctors for themselves as well as for the patients in their hospital. Self-interest, therefore, will compel every community to establish its hospital, even if charitable motives had no influence.

Again, the trustees of all hospitals of any size should establish a training-school for nurses. Only those who, like myself, have lived in the period before such training-schools were established, can appreciate the vast improvement effected in a hospital by this change. To replace the former ignorant, untrained attendants by "trained nurses whose jaunty caps and pretty uniforms and often winsome faces almost make one half wish to be sick, and when one is sick, half loath to be well," is not only a boon to the patients but to the doctors as well. The intelligent, well-trained nurse, who is on the alert to observe every important change of symptoms and who will keep accurate bedside notes, is the doctor's right hand. Not a few patients who would otherwise lose heart and hope are, one may say, lured back to health and happiness by the tactful attentions and restful but efficient care of such a nurse. The community of the well-to-do also are benefited, because the hospital provides them with skilled nurses in their homes when they are so unfortunate as to be compelled to remain there instead of going to the hospital.

The old repugnance to entering a hospital when sick or when an operation is demanded is rapidly fading away. The immense advantages of a good hospital over the most luxurious home are now acknowledged on all hands. The poorest patient in a hospital is better cared for, his case more carefully investigated by bacteriological, chemical, and clinical methods in a hospital than are the well-to-do in their own homes. Indeed, wise surgeons, except in cases of emergency, now very properly refuse to do operations in homes instead of in hospitals. In many instances lives that would be lost in homes are saved in hospitals, where the many and complex modern appliances for every surgical emergency are provided.

The hospitals in direct or indirect connection with medical schools, however, do a far larger work than merely the training of its own staff of doctors. They train three other classes of doctors: First, the undergraduates who are aspiring to the degree; secondly, graduate physicians who spend a certain amount of time in the hospitals either as internes or as temporary students refurbishing their professional knowledge; and thirdly, experts in certain branches of medicine and surgery.

The undergraduates are taught first in the general clinics, where to some extent they learn both by didactic instruction and by seeing the patients, hearing their histories, and witnessing the institution of proper treatment by prescription, by regimen, or, if necessary, by surgical operation. This is of great value, particularly in the more important cases, and especially, for I speak now as a surgeon, in important operations. It is often objected that students see nothing in large clinics. To some extent this holds good; but no student can look on at an operation when the jugular vein or the lateral sinus is torn, the pleural cavity opened, the bowel lacerated, or other of the great emergencies of surgery occur and fail to be impressed by the coolness of the operator, the carefully explained methods adopted for remedying the mischief, and the various devices used by him to save life, all of which hereafter will be used when similar emergencies may occur.

Yet far more important than the public clinics are the smaller clinics held with classes of 10 to 20 men each, when under an experienced teacher the absolute work of the clinic is divided among the various students in turn, watching the pulse and the respiration, giving an anesthetic, assisting actively at operations, percussing the chest, palpating the abdomen, determining inequalities of the surface or the varying density of underlying organs. Here is the real forum in which our modern medical student acquires his skill. In many cases visits in the ward itself are made, and to a small group around the bedside the physician or surgeon will point out the phenomena to be recorded, the need for the examination of the blood, the results of bacteriological cultures, the facts discovered by the microscope, or the chemical reagent. By the Socratic method also he will reveal to the student the imperfection of his knowledge, call out—e-ducate—his powers of observation, of reasoning; stimulate his thought, and give him an impetus which will last throughout life. Who that has "walked the hospitals" with a Skoda, a Trousseau, a Nélaton, a Da Costa, or a Mitchell can ever forget their teaching?

It is sometimes objected by those who are not familiar with the actual facts, and especially by trustees, that this method of actual bedside instruction does harm to the sick. I speak after an experience of nearly forty years as a surgeon to a half dozen hospitals and can confidently say that I have never known a *single patient* injured or his chances of recovery lessened by such teaching. Of course, the physician or surgeon uses common sense. He would not allow a number of men to palpate the abdomen of a patient with peritonitis, or move an acutely inflamed joint, nor would the physician allow a patient with pneumonia to have the chest unduly exposed, or a typhoid fever patient disturbed if his condition was such that it would be inadvisable. But such cases are the exception. In fact, many of you are familiar with patients who have responded to repeated percussion by members of such a class by prompt recovery, attributed by the patient to the supposed medication of percussion. Moreover, it is by this actual practice only that the student acquires the necessary skill in the use of modern instruments of precision, such as the stethoscope, the laryngoscope, the esthesiometer, the sphygmomanometer, the various specula. Here he learns when to make blood counts, how to take histories, arrive at the actual facts by skilful cross-questioning, note the varying symptoms and physical signs of a case, determine the need for laboratory investigations, all under the guidance of skilled observers, who will point out his errors, encourage his queries, and stimulate his thought.

Moreover, trustees may overlook one important advantage of a teaching hospital. Who will be least slovenly and careless in his duties, he who prescribes in the solitude of the sick chamber, and operates with two or three assistants only, or he whose every movement is eagerly watched by hundreds of eyes, alert to detect every false step, the omission of an important clinical laboratory investigation, the neglect of the careful examination of the back as well as of the front of the chest, the failure to detect any important physical sign or symptom? Who will be most certain to keep up with the progress of medical science, he who works alone with no one to discover his ignorance; or he who is surrounded by a lot of bright young fellows who have read the last *Lancet,* or the newest *Annals of Surgery,* and can trip him up if he is not abreast of the times? I always feel at the Jefferson Hospital as if I were on the run with a pack of lively dogs at my heels. I cannot afford to have the youngsters familiar with operations, means of investigations or newer methods of treatment of which I am ignorant. I must perforce study, read, catalogue, and remember; or give place to others who will. Students are the best whip and spur I know.

Of the value of training graduates in postgraduate work I need scarcely speak to this audience at least. The doctor who graduated five, ten, or fifteen years ago comes to our great centers of medical education and renews his youth at the fountain of knowledge. He learns the use of all the new instruments, sees new methods of operation, new methods of treatment, new means of diagnosis, and goes home an enormously better equipped man.

The trustees should see that the staff does not become fossilized by following the same ancient local methods from year to year, but should encourage them to visit other hospitals, see other men operate, hear other men discourse on the latest methods of investigation, and then import into their own hospitals all the good found elsewhere. I learn a deal by such frequent visits to the clinics of my brother surgeons, and if one who has grown gray in the service can thus learn, surely the younger men can do so. When we are too old to learn we are too old to remain on a hospital staff.

I do not know anything which has more impressed upon me the enormously rapid progress which surgery is making than a recent experience. I was absent from this country for almost a year and a half. In that time circumstances were such that I saw almost no medical journals and but few doctors. I have been home now eight months and even with incessant work I have not yet caught up, so rapid has been the progress of surgery in this short time. Had I been absent for five years verily I should have been a "back number," and never could have caught up at all.

In his very excellent Presidential address before the Association of American Physicians in 1901, Professor Welch made a plea for hospitals to afford "the requisite opportunities to young men who aim at the higher careers in clinical medicine and surgery." He called attention to the fact that in our bacteriological, pathological, and anatomical laboratories the opportunities, though still too few, were reasonably good, and in a few places exceptionally good, for the training of young men for positions as teachers of anatomy, pathology and bacteriology. Any young man in these departments who by good hard work makes for himself a name is fairly sure, before long, of being called to some important post as a professor, director of a laboratory, or some similar position. But the facilities for work in clinical medicine and clinical surgery are far more restricted, since opportunities for both the exercise of their clinical skill are less frequently open to them and the possibility of combined physiological, pathological, bacteriological and anatomical research along with their clinical work is but scantily provided for. This plea is reinforced by the recent paper of Sir Michael Foster (*Nineteenth Century,* January, 1901, p. 57). These special graduates, bright young men, determined to devote themselves to one or another department of medicine or surgery, are the men who bring honor to the school at which they obtain their training, and are invaluable to the community. They are the future Jenners, Pasteurs, Virchows, Listers, DaCostas and Grosses, and our hospitals should provide for these exceptional men exceptional facilities.

The third object of a hospital is the promotion of knowledge, and so, fourthly, the good of humanity. Physicians and surgeons engaged only in private practice do not generally keep notes of their cases, and rarely publish important contributions to knowledge. I find in 100 books taken consecutively in my library that 85 were written by hospital men and only 15 by authors not connected with any hospital so far as was indicated on the title page.

In order that proper investigations may go on, trustees should enforce a permanent record of all the cases treated in the hospital, properly indexed, from which the staff may derive their data for papers and books. Each large hospital should have its pathological resident as well as the clinical residents in the various wards, so that post-mortem records shall be well kept, pathological, bacteriological and chemical investigations of the various secretions, or blood counts, etc., shall be properly made and permanently recorded in such a manner as to be accessible.

It is too often the case that trustees, as I have said, regard their duties and responsibilities at an end when they have taken care of the funds and elected the staff. They may say that after all this is their real duty, and that all that I have advocated is medical and surgical, and the responsibility for it should devolve on the staff and not on the trustees. I do not take so narrow a view of the duties of trustees. When they have elected a physician or surgeon, if he neglects his duty, it is their business to displace him and fill his place with another man who will attend to his duty, and the duties that I have indicated pertaining to the increase of knowledge as well as of its diffusion are quite as much within their province as it is to see that the funds are invested to the best advantage. The intellectual funds as well as the invested funds must bring in good dividends.

If trustees and staff work together for such a purpose and in such a manner, they will create an ideal hospital which will do more good to the patients than any other type of hospital. It will attract the best physicians and surgeons in every community, will acquire the best reputation, not only local, but it well may be national, and do the most for the good of science and the benefit of humanity.

It may be said that this is an unduly strenuous view of the duties of trustees, that in our father's day and in our own earlier lives no such conditions existed or were contemplated. "I need hardly ask a body like this," said President Roosevelt in addressing the Methodists assembled in council, "to remember that the greatness of the fathers becomes to the children a shameful thing if they use it only as an excuse for inaction instead of as a spur to effort for noble aims. . . . The instruments with which, and the surroundings in which we work have changed immeasurably from what they were in the days when the rough backwoods preachers ministered to the moral and spiritual needs of their rough backwoods congregations. But if we are to succeed, the spirit in which we do our work must be the same as the spirit in which they did theirs."

Moreover, we must remember that "the world-field into which all nations are coming in free competition by the historical movement to which all narrower policies must sooner or later yield, will be commanded by those races which, in addition to native energy and sagacity, bring the resources of scientific investigation and of thorough education." The international race for the leadership of the world is just as strenuous and intense in medicine as it is in commerce. If we are going to join the race and win the prize there must be the highest development of American education at the top. The best men must be pushed to the front, and ample opportunities for growth, for investigation and for original research must be provided. Never has there been so large an opportunity for the man of large ideas, complete education and indomitable energy and purpose as there is to-day. The world is waiting, looking, longing for him, and will cry "Make room" for him when he is found.

In the hands of the trustees of our colleges and hospitals are the money and the opportunity for developing such men. If the right spirit pervades both trustees and medical faculties and hospital staffs, then it will be but a short time before America will lead the world in medicine as well as she now does in commerce.

Will the profession rise to the level of their great opportunity? Yea, verily they will! Never yet have they been wanting when the emergency arose; not only the emergency of labor, but also the emergency of danger.

In Russia the common soldier counts for little. Yet in Vladikavkaz (where the Dariel Pass—the old Portæ Caspiæ of Herodotus—leading from the Caucasus joins the railroad from Baku on the Caspian to Moscow) is a monument to a common soldier. At the last battle in which the Russians won the victory over Schamyl which gave them undisputed sway over the Caucasus, this soldier blew up a mine and won the day at the cost of his own life. It was ordered that his name should never be erased from the list of his company. At every roll-call when his name is reached, the solemn answer is given, "Died in the service of his country."

In our hospitals lurk the deadly breath of diphtheria, the fatal virus of bubonic plague, of cholera, of yellow fever, of typhus fever, and the ever present danger of blood poisoning. I have known of brother physicians who have died victims to each one of these scourges. Yet who has ever known one of our guild to shrink when danger smote him on the right hand and the left and death barred the way? As brave as the Russian soldier, ready to risk life, and, if need be, to lose it, these martyrs to duty shall never have their names stricken off the honor list, and at the last roll-call the solemn reply shall be, "Died in the service of humanity."

## ORIGINAL ARTICLES.

### FRACTURE AT THE BASE OF THE SKULL.—NEUROLOGICAL AND MEDICOLEGAL CONSIDERATIONS.*

BY PEARCE BAILEY, M.D.,

OF NEW YORK.

In thanking you for the great honor you have conferred upon me, and in assuming the direction of the proceedings of this society, I am going to ask you to reconsider a theme old enough for Hippocrates to have written a book about. Old as it is, the story is not all told and will not all be told for many years to come. The main subject is the ultimate clinical effects of traumatic injuries to the brain. But the present observations relate to it only in so far as such injuries have resulted from or been associated with fractures at the base of the skull. I have chosen fracture at the base as the point of departure, because it represents an extreme degree of violence and a certain consistency of type. Whether or not the brain be grossly lacerated, contused or compressed, it cannot fail to be affected in its physical structure by a force sufficient to break its bony case by bursting. Consequently, in spite of the great variety in the extent, severity, and character of the cerebral lesions, in fracture at the base we have a definite index of extreme violence. In it, also, we have a variety of cranial injury of a certain degree of uniformity. This is readily shown by noting the mortality from this injury as shown by large numbers of cases studied at different times by different observers. Heer (*Beiträge f. kl. Chirurgie,* 1892-9) in 58 cases had 29 deaths or a mortality of 50 per cent.; Van Nes (*Deut. Zeitsch. f. Chirurgie,* Bd. 44), in 82 cases had 39 deaths; or a mortality of 47 per cent.† Phelps ("Traumatic Injuries of the Brain," etc., N. Y., 1897), in 286 cases had 176 deaths, or a mortality of 61 per cent.; Dr. R. F. Weir and Dr. W. T. Bull having kindly given me access to their histories at the Roosevelt Hospital, I find that 60 cases were received there during the years 1900 and 1901. By adding to these nine cases, of which I have private records, the resulting total is 68 cases. Of these 40 died, a mortality of 58 per cent.

This comparative uniformity in fractures at the base as death-producing injuries is further carried out by the constancy of clinical symptoms. Thus in Van Nes' 82 cases, in my 68 cases, and in Heer's 58 cases, the various focal signs were distributed as follows:

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* President's address before the New York Neurological Society, Jan. 6. 1903.

† Percentages are approximate.

Optic nerve (amblyopia and amaurosis): Van Nes, 3 cases; present series, 1 case; Heer, 2 cases.

Third nerve (pupillary inequality not counted): Van Nes, 1 case; present series, 5 cases; Heer, 2 cases.

Sixth nerve alone: Van Nes, 0 cases; present series, 1 case; Heer (1 only permanent and this bilateral), 4 cases.

Sixth and seventh nerve: Van Nes, 3 cases; present series, 1 case; Heer, 1 case.

Seventh nerve alone: Van Nes, 10 cases; present series, 9 cases; Heer, 9 cases.

*Paralysis of Extremities.*—From the uniformity in localizing signs and in mortality that is thus demonstrated, the conclusion is unavoidable that the brain lesions which accompany fracture of the base have a certain constancy. And while the bone lesion is in itself comparatively unimportant, it serves as an excellent index of the degree, direction and character of the violence which affects the brain. It is not within the scope of this address to go into all the symptoms of fracture at the base, but some of the purely neurological ones, especially those bearing on the cranial nerve palsies, may receive brief mention. In considering them it must be remembered that the larger number of the patients are in coma when first examined, and a goodly proportion die within twenty-four hours of the injury. Examinations, therefore, are difficult, and many cranial nerve symptoms, if slight, doubtless pass unrecognized. The cranial nerve palsies are usually multiple, only occasionally there being one nerve alone involved. They come on immediately after the injury, or a few hours after, according as laceration or compression by hemorrhage is the determining cause. The cases in which they do not appear until several days after the injury are difficult of explanation. The hypothesis that they are the results of the nerve being caught and compressed in callus formation hardly seems reasonable, as these late appearing palsies are rarely permanent. Neuritis ascendens in the cranial nerves is frequently referred to, but the condition is unfamiliar to me.

*Olfactory Nerve.*—Paralysis of this nerve is sometimes the only focal symptom of fracture at the base. Again, it occurs in combination with other cranial nerve palsies. As a rule, however, it is absent.

*Optic Nerve.*—Injury to this nerve is more frequent, probably, than clinical records indicate. Slight symptoms referable to it readily pass unnoticed in comatose patients, or in those not submitted to special examination. The nerve is almost always affected in front of the chiasm, hemianopic symptoms being rare. Optic nerve disturbances after fracture at the base are most frequently due to involvement in the fracture of the thin walls of the optic canal. Displaced portions of bone may crush and permanently destroy parts of the nerve causing permanent blindness in the corresponding portions of the field. It is probable, also, that amblyopia may be caused by hemorrhages of the base, which push their way into the optic canal, without this latter being fractured.

The type of contraction of the field is not the concentric, as in ordinary atrophies, but rather a loss of the upper, lower or particularly the lateral halves of the field. The visual disturbances are for the most part one-sided, corresponding to the side of the injury, which is usual to the frontal temporal or parietal regions. It is rather difficult to estimate the frequency with which substantial recovery from the initial amblyopia or blindness occurs.

I am inclined to think that ophthalmologists, who most frequently see the cases which have gone on to atrophy and permanent blindness, regard the prognosis in every case as more serious than do surgeons, who see the patients immediately after the injury, and may therefore witness defects in sight which are transient. Knotz (*Wiener med. Presse,* 1900, 30, 31, 35) reports a series of ten clinical cases giving symptoms of fracture at the base and visual disturbance. In half of his cases vision was affected in both eyes, though the eye corresponding to the side of the external injury showed more serious and more permanent symptoms. Of these ten cases, in eight there was amblyopia on the side of the injury, but in only one was the amblyopia permanent. On the side opposite to the injury, amblyopia occurred five times, but was always transitory. In one case there was immediate and permanent blindness on one side. In another there was immediate blindness in both eyes, but vision was perfectly restored in the eye opposite the injury, and on the same side there was left a contraction of the visual field. Of Van Nes' three cases of unilateral opticus injury, immediate one-sided blindness resulted in all. In one death resulted, in another complete restoration in six weeks, in the third optic nerve atrophy.

Traumatic affections of the optic nerve are frequently accompanied by oculomotor palsies and by deafness.

*Palsies of the Ocular Muscles.*—After the facial, paralysis of the motor nerves of the eye are the commonest focal signs in fracture at the base. If variations in the pupils are considered as belonging to palsies of the motor nerves then these latter are the most frequent focal signs of all. Irrespective of the condition of the pupils, the order of frequency of involvement of the motor nerves of the eye is the third, sixth and fourth. The third is sometimes, though rarely, affected in its entirety. Most frequently its injury shows itself as ptosis, usually unilateral but occasionally bilateral which may occur in association with paralysis of the opposite extremities. Injury to the fourth has been very rarely recorded. It sometimes occurs in conjunction with other cranial nerve palsies, as in a case of Knotz, in which there was total ophthalmoplegia, interna and externa. The sixth is most frequently injured together with the seventh, both commonly being associated with deafness. The sixth is sometimes, also, injured alone, usually on one side, although bilateral palsies of it have been observed.

The prognosis of these palsies is very good. It is rare for them to persist for more than a few weeks or months as serious disabilities. Usually, in that time, double vision passes away, if it existed, and the eyelid, if there was ptosis, raises itself sufficiently for effective use. In most cases of traumatic ptosis, however, weakness sufficient for identification remains in the eyelid, although the patient may be unconscious of it.

Abnormality of the pupils is the commonest sign of all. Some abnormality existed in 42 per cent. of my 68 cases, the most frequent condition being inequality. In the cases with hemiplegia the larger or dilated pupil was on the side opposite the paralysis of the extremities. It seems probable that, generally, though not always, the dilated pupil corresponds with the side of the greatest brain injury. Certain conditions of the pupil seem also, from my cases, as of particularly grave significance. Of the cases with equally contracted pupils, five died and only one recovered. Of two patients with pupils immobile to light both died. Of three with pupils changing at different times, so that they were contracted at one time and again dilated, presenting alternating myosis and mydriasis, all died.

*The Fifth Nerve.*—This nerve is rarely, if ever, the seat of isolated traumatic intracranial paralysis, although it is occasionally paralyzed, especially in its sensory distribution, in conjunction with other nerves. The resulting anesthesia affects one or two or all three branches of the nerve.

*The Facial Nerve.*—This nerve is the most frequent one involved singly in fracture at the base. With Heer it occurred in 17 per cent. of the cases, with Van Nes in 12 per cent., with me 10 per cent. The whole nerve is involved, but most severely in the lower branches; the paralysis is also more apt to be permanent in the lower branches. Sometimes the facial palsy remains as a permanent disfigurement. More frequently, however, it, like the other cranial nerve palsies, is temporary, although it, like the others, usually leaves some trace by which it may be identified by the practised eye. The nerve may be affected at any point in its passage through the petrous portion of the temporal bone. Most frequently, however, it is injured below the branching of the superficial petrosal nerve. When injured at the geniculate ganglion there is paralysis of the soft palate, as occurred in one of my cases. Disturbances of taste are rarely mentioned. When present they are transitory.

*Eighth Nerve.*—Injuries to the ear itself are so frequent in fractures at the base that the diagnosis of an acusticus lesion is extremely difficult. Deafness is particularly frequent with palsies of the optic, of the sixth and seventh together, and of the seventh alone. It can only be positively identified as of nerve origin when there is nerve deafness, with paralysis of all three branches of the seventh, without disturbances of taste.

*Paralysis of the Extremities.*—This variety of paralysis exists much more frequently as weakness, or increased rigidity, than as profound loss of power. It usually takes the form of hemiplegia, though monoplegia or even polyplegia, are sometimes seen. Polyplegia seems regularly fatal. With hemiplegia, on the other hand, death is by no means inevitable, as recovery occurs in about one-half the cases. As the patients get better, the hemiplegia rapidly recedes; and as a rule recovery of power and balance is much more complete than is the recovery from hemiplegia of apoplectic origin.

*Knee-Jerks.*—The knee-jerks are frequently diminished or lost at first. Later they return and become hyperactive or exaggerated. Unilateral exaggeration accompanies hemiplegia. A hyperactivity of the knee-jerks commonly persists for a long time, if it ever goes away. It is rarely associated with coma.

*Convulsions.*—Convulsions are rare in fractures at the base. In my 68 cases there is no record of them other than a slight twitching in parts the seat of hemiplegia. This infrequency of convulsions is in accord with the statement, to be made a little farther on, that fracture of the base does not appear in the causation of epilepsy.

*Mental Symptoms.*—Fracture at the base sometimes, although rarely, occurs without loss of consciousness. Occasionally cases are reported in which the injured persons are rendered unconscious for a brief period and then rally, without presenting further symptoms for several days or possibly a week or two, when they die suddenly or develop the symptoms of meningitis. But, as a rule, fracture at the base is synonymous with more or less complete coma, which follows the accident immediately. From the initial unconsciousness a large proportion of the patients who die never emerge. Occasionally the initial coma lessens, the patients regain sufficient consciousness to answer questions, but relapse again into unconsciousness from which there is no further rallying. Profound and persistent coma is an ominous prognostic sign, although I have known it to last a week and still be followed by complete recovery. The most characteristic mental state in these patients is semi-coma or stupor with delirium. In this the patients lie quietly. They resent being disturbed, and if disturbed become resistant and irritable. There is frequently a muttering, hallucinatory delirium, which, especially in alcoholics, may become sufficiently violent, with shouting, screaming, etc., to require restraint. The faculty of attention is nearly always seriously impaired. The patient may be aroused and made to answer questions intelligently, but the attention soon wanders and they relapse again into stupor or delirium. Comprehension of persons and places is disturbed in varying degrees. Headache may or may not be complained of. Some patients recognize their condition and their surroundings; others think they are anywhere but where they are, mistake the doctors and nurses for their friends, or fail to recognize their friends. Sudden impulses, such as to get out of bed, to rush from the room, etc., are very common. These are often conspicuous in patients who are fairly clear most of the time. They are illustrative of the changeability in symptoms of brain injuries. A patient who at one moment talks rationally and coherently, at the next may be totally irrational and irresponsible. It is a characteristic which should be more thoroughly recognized by those who have to care for these cases. The memory for the period of mental symptoms is always impaired. In the condition known as retrograde amnesia the memory is lost for a period some time prior to the accident. Thus, in one of the cases to be cited later, the patient's mind was a blank from the time he bought a railway ticket until he found himself in an ambulance, although fully half an hour had elapsed between his last recollection and the accident. In another, the memory was imperfect and certain events were entirely obliterated for a period of four days prior to being thrown from a horse. (It should not be forgotten that retrograde amnesia is also found in hysteria.)

The duration of the mental symptoms in patients who recover from fracture of the base is variable in the extreme. Some patients emerge from the initial coma clear and have no further symptoms. Others continue in the condition of semicoma for days and even weeks. In others the condition persists still longer, so that long after the physical strength is regained there are serious mental anomalies. The following case illustrates the latter condition:

An old gentleman, about January 12, 1902, was caught between two trolley cars, was thrown to the ground and rendered unconscious. He was taken to the Roosevelt Hospital, where I saw him about one week later in consultation with Dr. G. E. Brewer. The patient had been delirious and somewhat noisy since coming to the hospital. After being in the hospital a few days, he suddenly developed paralysis of the right external rectus.

The mental state at the time of my examination was soporific with impulsive tendencies. He lay in bed with the eyes closed, but could answer questions, although the answers were often not pertinent. The impulsive tendencies showed themselves by calling out and shouting, by suddenly trying to get out of bed, etc. These latter symptoms grew worse rather than better, so that the patient deteriorated mentally in spite of physical improvement. He was taken from the hospital in March, but was so irresponsible and uncontrollable that the question of commitment to an institution for the insane came up. On March 17, 1902, I examined him again at his home. He had no recollection of having seen me before, although he said that he knew me perfectly well and that my name was Mr. Brown. He said that he had not been in a hospital at all, but that he had been staying in hotels and thought he had been away on some long journey, although he did not know where. He did not know where he was or what the season of the year was. With this lack of orientation, he would wander about by himself, would break the furniture and smoke incessantly. Physically he seemed perfectly well. With the exception of waking up at night and becoming excited, he slept well. Immediate commitment seemed inadvisable, and soon after this the patient began to improve and in six weeks was perfectly well. His son, writing in January, 1903, says that as far as he can determine his father's intellect is now as good in every way as before the accident.

In February, 1903, the patient came to my office for examination. I could discover no evidences of mental defect or perversion. His memory for the period of time that he was in the hospital and for a few weeks subsequently was imperfect and cloudy, although he remembered seeing me and some of the replies he made to my questions.

This case might be called, and perhaps rightly, one of traumatic insanity. But it only differed from many others of fracture at the base in that the symptoms persisted for an unusual length of time. It seems to me that by a proper classification it would be denominated protracted traumatic delirium. Further into the symptoms of fracture at the base it is not my purpose to enter. The condition of the pulse, the temperature, the evidences which are pathognomonic of defect in the cranium, such as hemorrhages or cerebrospinal fluid appearing externally are treated extensively in text books on surgery.

*Prognosis.*—This is to be considered as (*a*) immediate and (*b*) ultimate.

(*a*) *Immediate Prognosis.*—A fatal result is to be looked for in more than half of the cases of fracture at the base. The combined tables of Heer, Van Nes, Phelps and myself, comprising a total of 494 cases, show a mortality of 57 per cent. In this connection it must be stated that some hospital records show a much higher mortality. For example, of 36 cases admitted to the House of Relief in 1900, 33 died, and of 19 cases in 1901, all died. This may be in part explained by the fact that this hospital receives its patients from a section of the city where alcoholism is particularly prevalent, and injuries particularly severe. Also, I understand that the diagnosis of fracture at the base is not made there except distinct brain symptoms are present. Death is, in the great majority of cases of fracture at the base due directly to the injury without intercurrent conditions. Of the 40 fatal cases of my series, 13 died on the day of injury and 12 died on the following day. Thus 62 per cent. of all deaths occurred within one day. Of Heer's 27 deaths, 13 occurred within 24 hours of the injury. Of my other deaths 6 occurred within two days, and 7 in between three and five days. According to these figures, 95 per cent. of the patients who die from fracture at the base do so within five days of the receipt of the injury. Those dying after longer periods usually have pneumonia or meningitis, although this latter condition is infrequent in New York. Age does not seem to be an important feature in prognosis. In my series the average age of those who recovered (4 patients being under ten years) was thirty years, and of those who died (5 patients being under ten years) twenty-seven years. The immediate prognosis is doubtless influenced by the patient's general condition of health, especially as regards conditions predisposing to pneumonia. I have no statistics on this point further than that two patients known to have had nephritis before the accident, made good surgical recoveries. It seems probable, however, that a healthy man has a better chance of withstanding a brain injury than does an infirm man. Alcoholism effects both immediate and ultimate prognosis profoundly. Alcoholic patients are more apt to die because they are more prone to pneumonia, because their heart action is weak, and because in them delirium is more violent, thus preventing them from resting quietly.

(*b*) *Ultimate Prognosis.*—The ultimate prognosis of paralysis of the cranial nerves and of the limbs has been spoken of when describing these symptoms. The question now to be considered is, what becomes of the patients who survive so severe a brain injury as fracture at the base implies. How, if at all, is their mental life and personality and activity affected? Do they substantially recover and return to their former businesses or vocations? Are they invalided and if so, how? Can insanity be looked for as a legitimate outcome, and do the patients, once surgical, become wards of the state as insane or epileptic? Literature which might answer these questions is not voluminous. Yet, from two points of view at least, some answer is desirable. First, because by it our conceptions as to how the brain reacts to traumata may be made clearer and grounds for accepting or declining to accept trauma as a cause of a variety of nervous diseases more firmly established. The second reason is medicolegal. In these days of mechanical equivalents and personal injury claims fracture at the base is a frequent subject of litigation. The medical witness is asked what the future prospects are for a plaintiff who, one or two years before, sustained such an injury. The broadest of generalities are frequently given as replies.

I have been able to obtain the subsequent histories of fifteen of the twenty-nine patients of my series who did not die, and offer them now for such light as they may shed on the question. A diligent search was made for the other fourteen patients, but they had never been known at the addresses which were given in at the hospital.

In all the cases except one the accident preceded this report by practically one year or more. The first seven are from the Roosevelt Hospital; the last seven from my private records:

*Case I.*—Boy, aged seven years; admitted April 20, 1901; discharged April 24. Now goes to school. Is slightly more irritable than formerly and often becomes boisterous and uncontrollable. Has had no convulsive attacks.

*Case II.*—Man, aged forty-eight years; admitted Nov. 17, 1900; discharged Nov. 19, 1900. Increased irritability is the only symptom at present. No fits nor indications of insanity.

*Case III.*—Man, aged thirty years; admitted Sept. 16, 1900; discharged Sept. 19, 1900. No symptoms noted. Moved from last address without paying rent.

*Case IV.*—Boy, aged five years; admitted Sept. 29, 1901; discharged Oct. 4, 1901. Since the accident this boy has been more nervous and irritable than formerly. Is subject to headaches. Has had neither fainting, dizzy, nor convulsive attacks.

*Case V.*—Man, twenty-seven years; admitted Nov. 12, 1900; discharged Dec. 5, 1900. This patient came from an ancestry of marked neurotic taint. Before the accident he had had an attack of pulmonary tuberculosis. From boyhood he had also suffered from the morbid fears characteristic of cerebral neurasthenia (Regis). About nine months after leaving the hospital he developed anew symptoms of pulmonary trouble from which he is now again recovering. The morbid fears are more pronounced than they used to be. But they always became worse when he was physically run down, so that the tuberculosis is perhaps as much or more responsible for them than the brain injury. Aside from the morbid fears, there are no other mental symptoms whatsoever. The patient sleeps well, has no attacks nor headaches.

*Case VI.*—Man, aged thirty-eight years; admitted Dec. 2, 1901; discharged Dec. 21, 1901. No symptoms noted since the accident.

*Case VII.*—Girl, aged thirteen years; admitted Dec. 14, 1901; discharged Dec. 21, 1901. Never had any symptoms since the accident. Goes to school.

In the following seven cases the notes are somewhat fuller:

*Case VIII.*—Young man of twenty-six years, thrown from his horse on his head in August, 1900. Lay in semi-coma, from which he could be partially and momentarily aroused, for twelve days. At this time in addition to other symptoms he presented a right-sided ptosis, with the left pupil larger than the right, and with paresis of the left side of the face. The knee-jerks were active. This patient made an excellent recovery. He has been examined at frequent intervals since the accident to the present time. The cranial nerve symptoms have not entirely disappeared. There is still a slight right ptosis, and the face, on close scrutiny, shows unequal innervation. The pupils are now equal, but the knee-jerks remain active, the right being somewhat more so than the left. When the patient recovered consciousness twelve days after he was hurt, it soon became apparent that he not only had no memory for the time that he was in coma, but that he had imperfect or no recollection or retrograde amnesia for events which preceded the accident. This retrograde amnesia covered a period of four days. Where he was, or what he did, on those days, he was unable to tell. During his convalescence he walked to the stable, and seeing a new runabout, asked whose it was. He had bought it himself, and had driven in it four days before the accident. For this period of time he never regained memory. At the present writing, the mental state of this patient is as good as ever. He has had neither headaches nor epileptic attacks, nor has his character undergone any noticeable change.

*Case IX.*—A lady, fifty years of age, was thrown from her carriage in August, 1901. Characteristic symptoms of fracture at the base, with profound coma for one week, from which she emerged gradually. My examination made nearly two weeks after the accident, showed, left third N. palsy, deafness on the left side, a slight left hemiplegia, thickness of speech and a confusional stuporous mental state.

Reexamined in Dec., 1902, in the presence of Dr. A. E. M. Purdy, with whom I first saw her, the only traces of the injury were, a slightly drooping left lid, hyperactive, but equal, knee-jerks, and a slight uncertainty in the muscular movements of the left foot. Subjectively the recovery was perfect with the single exception that she complained of peculiar feelings at times in the top of the head. No headache. The double vision passed away in a few months and never returned. She has had no attacks of any kind, and her husband declared that there had been no change whatever in her character, disposition or personality.

*Case X.*—A patient, alcoholic and suffering from nephritis, was found unconscious in the street in Jan., 1902. He was supposed to have had a stroke of apoplexy, but as he later developed bleeding from the nose and subconjunctival ecchymoses, and as he never presented any focal signs whatsoever, there is little doubt that he had a fracture at the base. He made a gradual recovery. Dr. Cyrus Edson with whom I saw him in consultation, kindly sends me the following report of his present condition. "He has never been the same as before the accident. He is apathetic and his mentality is sluggish. He cannot concentrate his mind on any subject for more than an instant. He is able to go about, but seems to have lost ability to perform any but the simplest duties of life. His mental balance is good. He has no delusions, nor anything of that kind. Physically, he is deteriorating slowly but surely."

*Case XI.*—A young man who was taken from the wreck on the New York Central Railroad in the Park Avenue Tunnel on Jan. 8, 1902. He was stuporous and delirious for a few days. The physical signs consisted of enlargement of the left pupil, paresis of the lower branches of the left facial nerve, and of the branch to the soft palate (N. pertrosal. superfic.). Slight deafness in left ear, and feeble knee-jerks. Subsequent examinations of this patient in November, 1902, and at Utica, in December, 1902, where his suit against the railroad was tried, showed a persistence, though in much less degree, of the cranial nerve symptoms. The knee-jerks had become hyperactive. The patient's general condition was that of profound traumatic neurasthenia. He had done no work since the accident, and had been the prey of numerous subjective symptoms. Conspicuous among them were irritable heart, insomnia, loss of weight, failure of attention, and great fatigue on all exertion. These symptoms may have been partly due to the suspense incidental to litigation. But I am convinced that the patient, if he exaggerated them, did so involuntarily and unconsciously. This patient also had retrograde amnesia. The last thing he remembers prior to the accident was getting on the train at New Rochelle. The journey to the city is a blank to him. There were also some periods of his life, months and years before the accident, about which he had lost all recollection.

*Case XII.*—A man, fifty years of age, suffering from chronic nephritis, was run into by a car in July, 1902. He immediately developed left hemiplegia, which improved at first and then deepened. When seen, two days after the accident, it was complete, involving face, tongue and leg. There was stupor from which the patient could be sufficiently aroused to answer questions. He improved slowly and returned to his home in the South. From his wife I have recently learned that his mentality and disposition have been entirely the same as before the accident. He sleeps well, and has no more headaches than before the accident. No convulsions nor dizziness. The hemiplegia persists, although it has improved considerably. The arm has regained but little power and the patient can only walk a short distance. He has given up his active business, but does legal office work. In this case the period of time since the accident, six months, is too short to permit positive conclusions.

*Case XIII.*—A boy, aged eight years, was run over by a heavy wagon. The resulting unconsciousness lasted four to five days. There was bleeding from both ears. I examined him twice. once five years and once seven years after the accident. Both examinations gave practically the same results, namely, a right peripheral facial palsy, involving all three branches with considerable deformity. There was deafness in the right ear with loss of bone conduction.

The parents maintain that the boy's character has changed materially in the seven years since the accident. He is generally bad tempered and gets in violent passions. He is worse in hot weather. He is hard to manage, and is constantly fighting. He gets up out of bed at night and wanders about the house. He has had no epileptic attacks and no illnesses since the accident.

*Case XIV.*—Boy, seven years of age, of neurotic taint and himself peculiar, in Feb., 1900, fell two stories. There resulted unconsciousness for 36 hours, with bleeding from the right ear. General recovery occurred in a week, but there remained a palsy of right sixth nerve (double vision) and of right facial nerve, and some deafness on right side. The superior branch of the latter was only slightly affected. From the cranial nerve palsies and the deafness, the recovery was perfect, and in Jan., 1903, Dr. W. B. Anderton, his physician, tells me that the boy is as well in every way as before the accident, that he goes to school, where his reports are satisfactory.

To these cases, eight in number, including the one given in the early part of this article, may be added some statistics of Bullard (*Boston Med. and Surg. Journal,* 1897, Vol. 136), who obtained the after histories of 19 cases of fracture of the base. Of these, 16 made apparently perfect ultimate recoveries. In two patients who were alcoholic, there was a greatly increased susceptibility to alcohol, and symptoms of irritability and violence. In one case, a school boy was reported as being unable to learn since the injury.

While the data now at our disposal is inadequate for too hard and fast deductions, it furnishes facts enough for certain general conclusions as to the results upon the mental life of those who survive so severe a brain commotion or injury as is implied by a fracture at the base of the skull. We are in the position to say, at the outset, that recovery, in the sense that the patient becomes as well as he was before the accident may be looked for in the majority of survivors within a year. In certain of these patients retrograde amnesia, or loss of memory for certain definite periods of time prior to the accident, is permanent; others complain that they do not remember proper names as well as formerly. In a certain small proportion of cases, on the other hand, the patients are left with changes in disposition and character. Such changes, while they do not attain a degree worthy of the name insanity, and while they do not prevent the patie from pursuing his customary vocations, are none the less distinct obstacles to material success. They show themselves, as irritability, quarrelsomeness, fits of anger, spitefulness, etc. They are sometimes associated with restlessness at night or insomnia. As Bullard has emphasized, and as I have observed, such symptoms are particularly frequent in alcoholics; and a very constant consequence of general head injuries is a lessened resistance to alcohol. Periodic headaches may also occur in such cases, or even in cases without other symptoms, though they are not particularly frequent. In addition to these changes in character, some patients show a blunting in all the intellectual faculties, which is usually observed as a direct sequence to the injury. They show defects in memory, in concentration and in behavior, which in children might be called feeble mindedness and in adults mild dementia. In the only case in a child of which I have a record (not mentioned in above series) these symptoms persisted for several months, and then the child became as intelligent and bright as before the accident. Such a mental state is particularly apt to occur in the alcoholic and in persons suffering from diseases in which the arteries share. Thus in one of the above series, a man suffering from alcoholism and Bright's disease has never regained mental powers. But in adults, as in children, such mental states may improve. Thus in a case described several years ago (Accident and Injury; Their Relations to Diseases of the Nervous System, N. Y., 1898) a patient sustained a fracture at the base, with left hemiplegia and ptosis on the right side. The physical symptoms disappeared in a few weeks, but the patient remained slovenly, unable to care for himself, to talk intelligently or to understand what was said to him. He was seriously demented. After a few months these symptoms also passed away to a great extent. The patient's mind cleared sufficiently for him to leave the almshouse, from which time he has been lost to view.

It is not safe to give a bad prognosis as to the ultimate mental state in these cases too early. After severe injuries a year at least is necessary for full restoration, and a bad prognosis given before that period may easily prove erroneous.

The characteristic mental state of traumatic neurasthenia may also result from fracture at the base. But whether this is exclusively the result of the physical injury, or whether it differs in its prognosis from traumatic neurasthenia of different origins, it is very difficult to say.

As convulsions play so minor a rôle in the acute symptoms of fracture at the base, we would hardly expect epilepsy to be a consequence of that injury, and it does not seem to be one. The statistics of the Craig Colony for Epileptics show that of the 826 cases at that institution under the supervision of Dr. W. P. Spratling, in only one is there any suggestion of a fracture at the base. In this case the history was entirely inadequate for a diagnosis of such an injury.

The question as it relates to insanity is, in the speaker's opinion, the most important one involved, bearing, as it does, upon the causal relationship between head injuries in general and mental diseases. Such a relationship is a frequent source of argument in psychiatry, in legal medicine, and in social life. But the merits of the question are difficult to determine. To collect from the wards of hospitals for the insane all the cases in which trauma capitis is advanced as a cause, and to utilize them as evidence for a traumatic origin of insanity would be misleading in the extreme. The families and friends of insane patients are ever eager to avoid the stigma of inheritance and to advance accidents, no matter how trivial, as causes of the mental disease. Histories obtained from the patients themselves are manifestly unreliable. This is particularly true for a disease for which trauma has been advanced as a cause more than for any other—general paresis. This disease is characterized by epileptic tendencies, by mental excitability and inattention which predispose to accidents of all kinds. Therefore, in spite of the many monographs which have been devoted to its traumatic origin, it has never been conclusively demonstrated that it can be the result of trauma capitis.

Is fracture at the base a cause of insanity? From the cases which have been cited in this paper it is plain that the characteristic mental state associated with fracture at the base is delirium and that this delirium does not ordinarily persist longer than one, or perhaps a few weeks. In one case it lasted longer, namely, nearly three months. But the symptoms remaining of the same type throughout and ending in perfect recovery, that case was reported as one of protracted delirium, rather than insanity. Insanity defies definition and the classification of mental diseases is the bane of alienists. But traumatic insanity should evidently be limited to such cases as are different in symptoms from the ordinary traumatic delirium, or to those in which the delirium is permanent or existent for an extraordinary length of time, or to those in which there is an interval between early symptoms and late ones. In none of the cases observed by me were these conditions fulfilled. In the following case which is an extremely rare one, they were fulfilled, partially at least, and the case may be considered as an example of a psychosis developing subsquent to early delirium.

I am indebted to Dr. H. S. Noble, Superintendent of the State Hospital at Middletown, Conn., for the history of this case. E. N. B., born in this country, of American parents; occupation that of a painter; married; aged forty-six years; admitted to the hospital May 21, 1891; duration of insanity six months; alleged cause, traumatism. The patient is 5¾ feet in height, with black hair and gray eyes. Has drank moderately for some years. The present attack, which is his first, resulted from an injury received nearly six months ago. As he was coming down the stairs from the paint-shop belonging to the hospital, where he was at the time employed, he made a misstep when near the top of the stairs and fell headlong to the bottom. He was picked up in an unconscious condition and carried to one of the cottages near by, where he lay confined to his bed for several weeks. At the time of the injury he bled profusely from the left ear for some hours and was quite restless, thrashing about and trying to get out of bed. He suffered extremely from headache and intolerance of light, and after consciousness was partially restored he was delirious for several weeks. As he gained strength and began to go about, his mind gave evidence of serious impairment. The expression of the face was changed and he was easily confused and bewildered, wandered about the city and neighborhood without special purpose, and often did not return home till late in the evening. He was irritable and fretful and abusive to his family, accusing his wife of having been unfaithful to him and on several occasions he threatened her. His malady was increasing and without lucid intervals or remissions. Although on one or two occasions when under the influence of anger he threatened to drown himself, he nevertheless was not regarded as suicidal, nor was he destructive or filthy.

*May 30, 1891.* Has thus far been quiet, cheerful and contented. Seems slightly elated, but has expressed no delusions. Meets his wife pleasantly and cordially when she calls upon him.

*June 1, 1891.* Is a trifle loquacious and shows an emotional instability. Consciousness is clear and he is completely oriented. Memory is unimpaired for both recent and remote events.

*July 27, 1891.* Is given limited parole on the grounds, as he is now able to control his emotions much better than at first. Judgment is somewhat faulty and his capacity for mental work is diminished.

*Sept. 1, 1891.* Is at present in a fairly comfortable condition, but he still shows some mental impairment, is a trifle silly, and self-control is lacking. Taken home by his son on trial.

Absent thirty-eight days.

*Oct. 9, 1891.* Brought back this evening with the corroborated report that he is no longer fit to be at large. He wanders about the streets constantly, drinking in the saloons, and is unable to fix his mind upon any kind of occupation. He is extremely irritable and abusive to his wife and accuses her of having been unfaithful to him. Has occasionally threatened violence to members of his family.

*Oct. 12, 1891.* Is quiet and orderly.

*Dec. 4, 1891.* Controls himself very well, but is at times irritable, faultfinding, and suspicious when speaking of his family. Complains of headache occasionally. Petition for appointment of conservator received and filed with commitment.

*Jan. 5, 1892.* Condition substantially the same as last noted. Bodily health very well maintained. Appetite good and sleep at night undisturbed.

*Feb. 10, 1892.* Mental symptoms somewhat improved. Is amiable, cheerful and no longer expresses suspicions regarding his family.

*March 28, 1892.* Continues to improve and is at present very comfortable mentally. Headache troubles him scarcely at all. Capacity and inclination for employment increased. Manifests an insight into his condition.

*April 5, 1892.* Is given parole of the grounds. Quiet, cheerful and amiable, but a trifle silly. Shows some impairment of *intellect* and *judgment,* and is emotionally unstable. There is no paralysis, paresis, or perverted sensations. Tone of feeling buoyant. Special senses unimpaired. Gait, station and coordination normal. Reflexes not examined. Sleep natural; no dreams.

*April 23, 1892.* Discharged improved.

*April 6, 1893.* Returned to the service of the hospital as a painter, having spent the time since his discharge as a patient at home and has busied himself about his house and garden the greater part of the time.

At the present date (Jan. 5, 1903), he is still employed at the hospital, having worked steadily since his return in April, 1893. There is still a slight degree of dementia manifest as evidenced by the dull comprehension, impaired judgment, diminished capacity for work and slight emotional instability.

This case being opposed to any in my experience, both personal and in literary research, it occurred to me that further light might be thrown on fracture at the base as an insanity causing injury by inquiry in the large hospitals for the insane. In response to a request from me, Dr. A. E. Macdonald, Superintendent of the Manhattan State Hospital, East, very kindly had the patients under his care investigated with a view to ascertaining a definite history of fracture at the base. Of more than 2,000 patients under his charge, over three-fourths of whom are men, in no case is there history or evidence of fracture at the base. It may be said, incidentally, that there are but two cases of fracture of the vault. In one patient, depressed, hypochondriacal and controlled by hallucinations of hearing, the symptoms developed eighteen months after injury; in another, probably paranoia, nine years after the injury. It is probable that the percentage of one person in one thousand, as shown at Manhattan State Hospital, East, is not greatly in excess of the percentage of skull fracture, of both vault and base, in the general population. The Central Islip branch of the Manhattan State Hospital is chiefly a service of chronic cases, most of the patients, about 3,000 in number, whose insanity is of long standing, having passed through the Ward's Island institutions. Histories in these cases are consequently somewhat indefinite. Dr. C. A. Smith, Superintendent of the hospital, has kindly sent me the following résumé of the cases in which trauma figures:

| | |
|---|---|
| Total number of cases with traumatic history...... | 14 |
| Number of cases with no external evidence of injury | 8 |
| Number of cases with scars or depressions over vault | 6 |

In none of the cases is it possible to make a diagnosis of fracture at the base.

As there is no reason to suppose that the mortality in persons who survive the acute symptoms attendant upon fracture of the base is particularly high, and as the majority of such persons are of the the indigent class, who would be obliged to go to the State Hospital for their district did they become insane, I think we may conclude, with considerable certainty, from the total absence of such cases in the State hospitals that fracture at the base, with its attendant brain injury, is an entirely negligible quantity in the etiology of disabling insanity. This opinion is further strengthened by the records of Bloomingdale, which receives a more prosperous class of the community. Dr. S. B. Lyon, Superintendent of Bloomingdale, has kindly gone over the records of that institution (census between 200 and 300), anent this question, and has informed me that at present there is one case of paresis there in which the diagnosis fracture at the base was made a short time before admission to Bloomingdale. But there is good reason to suppose, in this case, that paretic symptoms preceded the injury. The only other case on the records was that of an alcoholic man, who, two days after being picked up unconscious on the street, was committed to Bloomingdale, where he died in ten days. The autopsy showed fracture at the base. This was a case of delirium, probably alcoholic, and not to be classed as insanity.

The fact is that these institutions contain no cases of mental disease or dementia in which the history of fracture at the base is of great significance. It seems reasonable to suppose that if fracture at the base figured prominently in the etiology of insanity or dementia, some of the patients would be found in the asylums. The injury itself is very frequent. From the two hospitals, Roosevelt and the House of Relief, in the two years, 1900 and 1901, there were reported 115 cases of fracture of the base of the skull—an average of fifty-seven a year from two moderate-sized hospitals. If the records of Bellevue Hospital and of all the many others with ambulance services were accessible, I think probably we would find that an estimate of 500 cases of this injury every year was not excessive. Assuming this number as approximately correct, and assuming a mortality of 60 per cent. or even of 70 per cent. to be well within the limits of safety, we would have 150 cases a year of persons discharged from hospitals with fractures at the base. If insanity were a legitimate consequence of such an injury, we would be certain, in view of the class of persons who receive such injuries, to find some of them in the asylums of the Borough of Manhattan.

It would seem, therefore, that fracture at the base is an entirely unimportant cause of mental states which make commitment necessary or which render the patients incapable of earning their livelihoods. From this condition it is not proposed to generalize too freely. Fractures at the base can hardly be compared to those of the vault with the direct involvment of the cortex in the latter. The effects of cortical injuries in the etiology of insanity will be considered in a later paper. But it seems justifiable to apply such conclusions as we have arrived at in regard to the ultimate results of fracture at the base to the ultimate results from simple concussions of the brain.

52 West Fifty-third Street.

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## NOTES ON BLOOD PRESSURE IN MAN.*†

BY S. S. GOLDWATER, M.D.,

OF NEW YORK.

VON BASCH, summing up in 1887 the published results of clinical observations made by means of his sphygmomanometer, asserted that a clinical history which did not include an account of blood-pressure, was incomplete. This dictum will meet with the ready assent of those who have familiarized themselves with the literature of arterial tension. Nevertheless it is distinctly misleading to thrust a blood-pressure instrument into the hands of the practitioner, if one does not couple with the recommendation that it be used in practice, a warning as to the conditions of its use. An understanding of physiological variations of pressure necessarily precedes all efforts to comprehend the nature and the causes of variations of pressure which are pathological.

There has been a steady advance toward efficiency and simplicity in the blood-pressure apparatus offered for clinical use. The instruments of Mosso, Huerthle, von Frey, Potain, Oliver, von Basch, Hill and Barnard, Riva-Rocci and Gaertner, are well known. For a description of these appliances reference may be made to original sources; and to facilitate such reference a bibliography is appended. The present writer's observations were made by means of the tonometer of Gaertner.

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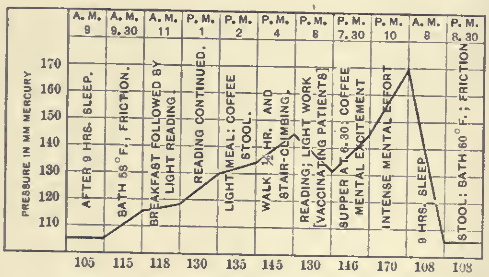
* This essay was awarded the William T. Lusk Memorial Science Prize by the faculty of the University and Bellevue Hospital Medical College, 1901.

† From the University and Bellevue Hospital Medical College.

Except where otherwise stated, the writer's experiments were made upon persons in the sitting posture. The subject's hands were placed on a table, approximately at the level of the apex of the heart. This element of technic is important in the interpretation of the absolute value of the pressures shown, but has no significance in relation to pressure fluctuations, because a single method was adhered to in the study of each case. The necessity for following this plan will be shown in the subsequent discussion of the influence of position on pressure.

*Normal Pressure Curves.*—Before proceeding to a discussion of the various influences that are capable of materially affecting blood-pressure, it will be worth while to plot the pressures in a normal case, shown by the tonometer at various intervals during twenty-four hours.

CHART A.

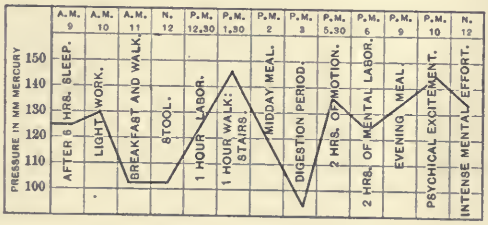


Sitting posture, hand on table at level of heart; no complete rest after meals. Intervals of time not otherwise specified, occupied by light reading.

M. H.: Medical student, age 27; organs normal.

For purposes of comparison a second curve of normal pressure is presented, as shown by the tonometer in experiments by Weiss.

CHART B.



In each of the preceding instances the subject of the experiment, so far as could be observed, was entirely tranquil except where otherwise noted. The variations in pressure are such as occur normally from day to day in any individual in like circumstances. As will be shown elsewhere in this article, fluctuations in blood-pressure which are essentially physiological, are more or less accentuated in neuropathic and impressible individuals, and especially in children of neurotic tendency.

*Effects of Eating.*—The fall of pressure which occurs during the digestion period, according to the chart of Weiss, is not confirmed by the writer's experiments, nor by those of other observers. Gumprecht's experiments show an average rise of pressure averaging 20 mm. of mercury, after the chief meal of the day. Jellinek, in 20 cases, found after meals in every instance an accelerated pulse, and he presents the following summary of his experiments: 14 cases, increase of pressure, 10 to 60 mm.; 4 cases, no appreciable change; 2 cases, blood-pressure decreased.

That the question is not a simple one is seen when one takes into account such disturbing elements as the use of stimulating foods, the ingestion of considerable quantities of warm fluids and the "periodic rise" which so frequently occurs during the afternoon and which is independent of the taking of food. (Broadbent, in his work on the pulse, mentions warm food as one of the causes of low tension.) Substantially, however, the two curves which are presented as representative of the work of two investigators, Weiss in Europe and the present writer in America, will be found to be consistent with each other and with the principles governing physiological fluctuations in tension. There may be some value in the suggestion that if the American chart does not present anything corresponding to the low-tension digestion-period of the German, it is because Americans devote no distinct period to digestion and repose.

*Normal Blood-Pressure as Commonly Found.*—Discussion of the special physiological and pathological conditions which influence arterial tension, will be preceded by a brief presentation of the general limits of tension, high and low, as they commonly are found.

The first twenty figures recorded in the writer's experiments show the following pressures in normal adults in a condition of tranquillity, in mid-afternoon hours. (The sitting posture obtained, as hereinbefore described. The figures represent mm. of mercury.)

Men: 136 115 125 124 124 134 100 105 104 122 114 128.
Women: 124 128 122 107 112 115 127 132

These figures may be compared with those of Gaertner, who after a vast number of tests, states that normal blood-pressure, as registered by the tonometer, is from 100 to 130 mm. Grebner, with the same instrument, found normal blood-pressure to fluctuate between 110 and 130 mm.; while Weiss's (tonometer) averages are, for men, 90 to 120 mm., for women, 80 to 100, the figures of Weiss representing tests made on patients tranquil and recumbent, the hand at the level of the heart.

These figures show a somewhat greater consistency than those of a similar series of observations by von Basch and other users of the sphygmomanometer. The figures given by these experimenters relate to the radial artery, unless otherwise specified:*

| | |
|---|---|
| von Basch (temporal artery) | 110 to 160 mm. |
| Zadek | 70 " 150 " |
| Federn | 80 " 100 " |
| Christeller | 70 " 150 " |

*Influence of Unaccustomed Rest.*—In experiments of this sort all the conditions are to be taken into consideration. Gumprecht, for example, using the Riva-Rocci apparatus, established 140 mm. as the average pressure in the healthy male adult. In hard-working laborers, however, he found a considerably higher pressure to obtain, pressures of 160 to 200 mm. constantly being found among men of this class in the absence of any demonstrable arterial or cardiac change. But when tests were made on laborers during their residence in a hospital, the average was found to be considerably less than when similar tests were made outside. Further investigation established the fact that laborers showed a considerable lowering of pressure during their first days in a hospital or elsewhere under conditions of unaccustomed rest and ease.

The fact just stated is especially to be remembered and allowed for by those who use the tonometer in hospital practice. As the rest afforded under these curcumstances may be the chief factor in bringing about the disappearance of a dangerously high pressure, an estimate of its influence should be made before discharging a patient in whom the maintenance of low tension is important; too much reliance should not be placed on the power of other therapeutic means to accomplish this end unassisted.

*Pressure Taken Directly in Amputation Cases.*—Before dismissing the subject of normal pressure, it is worth while to recall the direct measurements of intra-arterial tension in the human subject, made as long ago as 1856, in amputation cases, by Faivre. In the femoral artery pressure was ascertained to be equal to 120 mm. mercury. In another instance brachial tension was directly measured and found to be 110 mm. Similar observations were made in 1882 by Albert, who in a case of amputation of the lower extremity was able to connect a mercury column with the anterior tibial artery, where a pressure varying from 100 to 160 mm. was found. A variation of 40 mm. was produced by the passive raising of the body from the horizontal to the vertical position.

*Extremes of Tension.*—What are the extremes of arterial tension consistent with life?

The highest recorded pressure is in a case abserved by Weiss, who gives the following series of figures obtained in examinations made in rapid succession: 280, 245, 245, 255 mm. (tonometer). In this case vomiting and uremic convulsions occurred shortly after the above pressures were recorded.

Next in order is a case observed by the present writer. The subject, a Bellevue Hospital patient (J. G.), had a hypertrophied heart, but showed no trace of albuminuria. In this case aneurism was suspected and observations were therefore made on both sides of the body. The results were: Right hand, 240, 245 mm.; left hand, 205, 205 mm. This patient had been resting in the hospital for several weeks, and at the time of the tonometer tests was experiencing no particular distress. He was receiving tinct. strophanthus, 10 minims, t.i.d.

Gaertner records a case in which pressure was 240 mm.; and Fraenkel mentions a patient with arteriosclerosis and chronic nephritis, in whom pressure was persistently 220 mm.

The prognosis in persistent high pressure of an extreme grade depends to a certain extent on the cause; but the condition is always to be regarded as a grave one, and the necessity for prompt relief must be recognized.

Although it is no easy matter to determine the lowest pressure consistent with life, efforts have been made to do so. Christeller and Kapsamer have been particularly fortunate in obtaining material for observations in this direction. The latter names 60 mm. (tonometer) as the lowest pressure compatible with continued existence; while Christeller (sphygmomanometer) found, in the critical period of severe fevers, pressures between 40 and 50 mm.

Kapsamer cites the case of a woman who fell from a second-story window and who, after a brief period of unconsciousness, apparently recovered with no indication of her mishap beyond a few bruises. Her pulse seemed to be normal. The tonometer, however, revealed the gravity of her condition by indicating that digital blood-pressure was but 40 mm. This condition of extreme low tension persisted for thirteen hours, when the woman succumbed. In other cases observed by the same writer pressure following operation under anesthesia fell below 60 mm., and in every instance the death of the patient speedily followed.

*Blood-Pressure During Pregnancy.*—The so-called cardiac hypertrophy of pregnancy, with its accompaniment of high arterial tension, is a phenomenon which is frequently referred to in clinical and physiological teaching. Broadbent accepts the theory of high tension in pregnancy, and ascribes it to increased arteriocapillary resistance. That high arterial tension exists in many cases of pregnancy is probable; but that the former condition is a necessary consequence of the latter, is extremely improbable.

In most text-books of obstetrics the subject is discussed in a manner which is far from enlightening to the medical student. In Dorland's "Manual" one finds the following fairly typical statement: "The amount of the circulating fluid in the vessels of the body (during pregnancy) increases while its quality decreases; in other words there is a combined hydremia and anemia. In proportion as the red blood corpuscles diminish the white blood corpuscles increase in quantity, and the amount of fibrinogen increases so that the blood shows a greater tendency to clot.

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* Tigerstedt places the unavoidable errors of the von Basch method between 32 and 78 mm.

*The increase in the total amount of blood causes a corresponding increase in arterial tension* and imposes an additional strain on the heart; consequently there is soon produced a condition of hypertrophy and dilatation of the left ventricle, which, in moderate degree, should be regarded as normal during gestation." Although changes in the quality of the blood are here specifically referred to, the supposed high tension is ascribed merely to the increased quantity of circulating fluid.

Aside from the hydremia to which Dorland refers, interference with the eliminative functions of the body (constipation, albuminuria, etc.) would have to be taken into consideration in any attempt to explain rationally an increased pressure within the arteries of the body during gestation, not to speak of changes in the mental and nervous condition of the patient, and of relatively imperfect oxidation due, in some cases, to lack of exercise. The value of some of these influences is made plain in subsequent sections of this paper.

That the whole question of the "high arterial tension of pregnancy" will bear further investigation, is shown by the fact that in a series of examinations made by the writer at the Mothers' and Babies' Hospital and at the dispensary of the University and Bellevue Hospital Medical College, the tonometer failed to show that arterial tension is any higher in pregnant than in non-pregnant women. The figures which follow represent eleven cases, four primiparæ and seven mulitparæ, all of them advanced beyond the thirtieth week of pregnancy:

Primiparæ: 127 115 132 118.
Multiparæ: 112 107 115 122 113 123 111.

The women examined were under thirty years of age, had normal kidneys, and were in the habit of performing a certain amount of daily work requiring mild physical exercise.

In one case only was pressure found to be in any considerable degree above normal. Here the tonometer recorded 185 mm., and the suspicion of renal trouble was at once aroused. The patient was Lillie B., aged twenty-one, primipara. A searching verbal examination elicited the fact that sixteen days before, for the first and only time within her recollection, the patient had had slightly swollen feet, this condition being noticeable for scarcely twenty-four hours. The patient's urine had been examined at that time and subsequently, but with negative results so far as albumen was concerned. Physical examination showed a heart which was apparently normal, apex in fifth interspace, no murmur; no appreciable accentuation of the second sound. The radial pulse was suspiciously small in volume. Digital tension by tonometer, 185 mm. Another examination of the urine was made at once, and it was found to be loaded with albumen. Yet aside from the transient swelling of the feet, which had occurred more than two weeks previously, there were no subjective or objective symptoms of impending danger, and the patient's physician believed her to be in perfect physical condition. Thanks to the efficiency of the tonometer, the real state of affairs was detected in time. The patient was immediately put to bed; suitable dietary regulations were enforced and vascular sedatives were administered. A gradual abatement of the albuminuria followed, and three weeks later the patient was delivered without mishap.

With the exception of the last, the cases cited were typical cases of the last trimester of normal pregnancy, and the inference is that during this period, at least, a high level of arterial tension does not prevail. Where in any individual case an abnormally high pressure is found, causes independent of pregnancy or only indirectly due to it, are to be eliminated before we can assert that pregnancy is the cause of the increase of pressure.

Objection may be made to the records quoted in the preceding paragraphs, on the ground that in order to be strictly conclusive the evidence should include figures representing blood-pressure in the same individuals prior to the beginning of gestation. This objection is valid; and the only excuse for failing to present the required figures is that a lying-in-hospital could not, in the nature of the case, furnish facilities for their obtainment. But inasmuch as the blood-pressures ascertained to exist in these cases of normal pregnancy are practically identical with those which obtain in non-pregnant women of the same class, the earlier records of the subjects of our experiments could modify our conclusions only if the entire group or a large number of its members, when in the non-pregnant state, presented striking peculiarities in the matter of arterial tension.

*Puerperal Blood Pressure.*—Lebedoff has pointed out that blood-pressure is lower during the puerperium than during childbirth. In an exhaustive series of experiments this author found an average difference of 18 mm. between pressure taken between labor pains and that of the subsequent puerperal period. The lowest records were those of the third day of the puerperium, the next lowest, in order, those of the first and second days.

Curiously enough, Lebedoff contends that labor itself has no influence on blood-pressure, as shown by the measurements taken immediately after delivery and immediately before, *i.e.*, during labor.

The tonometer was used by the present writer in four cases in from thirty to forty minutes after the termination of the second stage of labor, and again, in each case, after twenty-four and forty-eight hours. These cases show an average diminution of pressure which reaches its maximum at the time of the last measurement, but which then averages only 4 mm., and in no case is greater than 7 mm. Tests were omitted during labor itself, and the experiments were not carried beyond the third day.

*The Influence of Psychical States.*—The influence of sensation, of intellectual effort, of emotion and of the exercise of the will upon blood-pressure, has been widely if not exhaustively studied. These influences should be borne in mind by the clinical observer in using the tonometer or other blood-pressure apparatus.

Complete separation of the psychical states of feeling, knowing, reasoning and willing can be made only logically or in a subjective sense. In no two persons, nor in any single person at different times, can conditions be produced in which one of the so-called faculties of the mind will be represented to the exclusion of the others, or in which all of them will exist in exactly the same proportions.

Added to this obstacle to experimental work is the confusion which arises from the varying methods of different observers, and from inevitable differences of description and of interpretation of complex mental phenomena. Hence we have Huerthle declaring that slight intellectual effort is attended by a rise of pressure, and Grebner maintaining that aural and visual sensory impressions produce a rapid but transient change of the same nature; while Kiesow contends that changes in blood-pressure are not caused by mere sensation as much as by pure intellectual activity. Similarly, it is maintained on the one hand that the rise of blood-pressure which occurs during voluntary muscular contraction is a reflex due to irritation of nerves of sensation by the contracting muscle, while on the other hand it is pointed out that the will alone, or the psychical perturbation accompanying a voluntary act, independently of the irritation of sensory nerves, is capable of bringing about the general arterial contraction which promptly follows normal muscular exercise.

This latter point was illustrated by an experiment by Kornfeld, who found that the result of walking a short distance in the customary manner was a slight rise of arterial tension; whereas if, in traversing the same distance, an effort was made to walk in a straight line, the rise of pressure was materially greater. On the other hand, in an individual who is in a condition of great anxiety and excitement, muscular effort will produce a lowering of vascular tension by distracting the mind and thus relieving mental strain.

The therapeutic applications of this principle are many, and are based upon the fact that the cardiovascular nerve centers are constantly responding to a variety of stimuli from without and from within. Thus the use of a hypnotic, such as trional or chloral, entirely aside from its direct effects on the vaso-motor and cardiac centers and on the vessels and the heart themselves, may powerfully diminish blood-pressure by working on consciousness. Again it is not unreasonable to suppose that in the often unexplained relief so frequently afforded to sufferers from various maladies by a "change of scene," an alteration in blood-pressure dependent on new psychical states is an important secondary factor. That such change of arterial tension might correct nutritional and functional disorders may be readily conceived.

In tracing normal blood-pressures during a period of twenty-four hours, one is impressed by the tremendous changes which are associated with modifications of the conscious state (sleep is of course to be considered only as a modification of the conscious state, that is, as something different in degree and not in kind from consciousness in the popular acceptation of that term). In the curve borrowed from Weiss's reports it will be noticed that a considerable rise of pressure is attributed to "psychical excitement." In the curve based on the writer's own observations a much greater rise is shown as a result of a lively argument. Unquestionably a large part of the almost constant rise of pressure from the hour of rising in the morning until the hour of retiring at night, is due to a succession of similar influences.

Finally, in looking at Chart "A," the overwhelming effect is noticed of a peaceful sleep in the recumbent posture, lasting for nine hours; here a pressure of 170 mm., which, if continued for a long time would produce mischief, is brought down to the modest level of 108 mm.

*The Periodic Afternoon Rise of Pressure.*— As already intimated, the so-called periodic rise of pressure, which commonly occurs in the afternoon, is to be explained at least in part in terms of psychical activity. Experimentally such factors as muscular activity, posture, meals, etc., can be practically eliminated in comparing morning with afternoon pressure, while the influence of changes in the conscious state cannot.

It is difficult to see how anything is to be gained by attempts to fix the amount of the "normal" periodic rise of pressure, inasmuch as individual variations will obstinately refuse to come within the limits of any law, unless the latter be made so elastic as to forfeit all significance. Nevertheless a number of investigators have devoted themselves to this problem, displaying in its pursuit more industry and zeal than wisdom.

Jellinek undertakes to say, as a result of his experiments, that blood-pressure is highest at one o'clock in the afternoon "in nearly every case." Zadek modestly declares that "independently of the midday meal" there is an afternoon rise of pressure amounting to from 8 to 15 mm. of mercury, and that this early afternoon rise is followed by a fall "toward evening." Kiesow arrives at the doubtful conclusion that "one patient shows a distinct elevation of pressure during the early hours of the day; with some others the pulse is stronger in the afternoon, while others show a rise of pressure in the evening."

After all, it would seem far more profitable to arrive at an intelligent understanding of the causes which are responsible for any "periodic rise" than merely to establish the fact that the thing exists. Such an understanding, once gained, will enable us to account for cases in which the periodic rise occurs as well as those in which it does not. One route leading toward a rational explanation of the matter, *i.e.*, a study of the influence of psychical states, has just been pointed out. Others will suggest themselves on a perusal of the sections which follow, dealing with muscular activity and qualitative changes in the blood.

*Mental Exhaustion.*—Thus far active mental states have been spoken of chiefly with regard to their ability to effect an exaltation of arterial tension. But while psychical functionation is capable of influencing arterial tension in the manner described, an undue prolongation of mental strain may have the contrary effect.

Broadbent has pointed out that sustained exertion, whether mental or physical, is one of the causes of a low-tension pulse; and he includes "depressing emotions" in his classification of the causes of low-tension. If by depressing emotions he means merely those which depress ,the pulse, well and good; but if those emotions which popularly are called depressing are intended, the classification is open to question.

It would perhaps be going too far to apply to a discussion of physiological factors the observations of Craig, whose work concerns itself wholly with the insane. Nevertheless, if, as Craig asserts, blood-pressure is invariably raised in insanity during periods of depression and is restored to normal when depression has passed away, one may at least emphasize the need of a further study of the relations existing in healthy individuals between depressing emotions and intravascular tension. We must not be misled by the use of apparently simple terms, into the hasty assumption that degrees of what we call depression in the psychical scale, induce proportionate degrees of depression or lowered tone in the bodily functions.

(To be Continued.)

## SOME RECENT ADVANCES IN MEDICAL THERAPEUTICS.*

BY THOMAS E. SATTERTHWAITE, M.D.,
OF NEW YORK;
PROFESSOR OF MEDICINE, NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

The science of therapeutics includes the application of any method or agency for the amelioration, cure or even prevention of disease.

Viewed from this broad standpoint, it will be generally conceded that the most brilliant therapeutic achievement of recent years has been the practical suppression of yellow fever in Havana by our Yellow Fever Commission.

Let us review the facts as they have been presented to us. Prior to 1901, for nearly 140 years there have been some yellow fever fatalities in Havana every month of all those years. It was in 1900 that our Government first undertook to determine whether the disease was susceptible of control. In the early summer of that year the Army Yellow Fever Commission consisting of Drs. Reed, Carroll, Lazear and Agramonte began their researches. In a few months they were able to announce that infection by the bacillus of Sanarelli was disproved to their satisfaction, and though neither they nor anyone else has discovered the precise germ as yet, they did succeed in proving that a species of mosquito, the *Stegomyia fasciata* was the intermediate host.

The mosquito theory it is now known originated with an Englishman, Dr. Charles F. Finlay, a resident of Havana, in 1881, while Manson was conducting his studies which led to his discovery that the *Filaria hominis* of elephantiasis arabum is also conveyed by a mosquito, though it antedated the discovery by his countryman Ross that the Anopheles mosquito conveys the malarial poison.

From this point on, the credit appears to be fairly due to Americans. It was of course, necessary to discover first what relation, if any, fomites bear to the production of the disease. Fortunately the commission was able to secure a number of non-immunes, willing to submit to the danger of contact with infected clothes, bedding and the discharges, under conditions of heat and moisture most favorable for generating the disease, mosquitoes being rigidly excluded. But protracted exposures of these subjects yielded no results; they were unaffected.

Having concluded these negative experiments to their satisfaction, the commission subjected a number of non-immunes to contact with contaminated mosquitoes, while every other probable causative agency was excluded. Thirteen of these individuals now contracted yellow fever, the period of incubation being in these experimental cases from about two to 5½ days. Further research disclosed the fact that the mosquitoes required from 12 to 14 days for contamination.

Finally the authenticity of each case was certified to by Drs. Finlay, Gorgas, Guiteras and Albertini, men of the highest repute as yellow fever experts.

As corroborative evidence that the mosquito is the carrier of the poison, similar experiments were made in other Cuban localities, and the diagnoses were confirmed by yellow fever experts. In all twenty-one cases of the disease were caused by contaminated mosquitoes. Three proved fatal, and at the autospies the characteristic lesions of yellow fever were found.

The theory was then accepted by the physicians of Havana, and it appears to fit all cases, though the complete problem has only just been worked out. For example we did not know until recently how a vessel, that had been infected in Southern waters, and fumigated by sulphur, could after a prolonged stay in a vigorous northern climate, exhibit a recrudescence of the disease, as soon as the vessel returned to the tropics, although there had been no possibility of a new contamination.

The explanation appears to be this: The fumigation by sulphur did not happen to kill the mosquitoes; or their eggs survived. According to Theobald mosquitoes hibernate in cold weather, even in the arctic regions. The gravid female lies dormant all winter, and deposits her eggs in the spring, while it is not unlikely that infected eggs may also hibernate.

Briefly, after eight months of anti-mosquito work, the disease disappeared entirely from Havana, while in 1900 there had been 300 deaths from it. And yet during the summer of 1901 there had been as many as 40,000 non-immunes in the city. Is not this a brilliant record for medical therapeutics? Here was a city of 275,000 inhabitants where ten years prior to the American occupation the death rate had been 45 and yet it was reduced in 1901 the last full year of American occupation to 22.11.

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* Presidential Address before the American Therapeutic Society, March 11, 1903.

If, therefore, similar methods can be pursued in Rio, Vera Cruz and the remaining foci of the disease, may we not confidently expect that yellow fever will eventually be wiped out in them also? But do not let us forget to give credit where it is due, to our army medical men first and then to the medical Governor-general, who gave them all the encouragement in his power.

It is sad, however, to think that this great discovery was at the expense of the life of one of the commission, Dr. Lazear, who fell a victim to the disease at his post of duty, and of Dr. Reed, its head, whose health was so undermined by his labors that he eventually succumbed; both examples of the heroic sacrifices medical men freely make in the cause of suffering humanity.

We are still in the throes of a grave cholera epidemic in the Philippines. It came from China. Up to Jan. 3 of this year, there had been thousands of cases, the exact number we shall never know, because the disease was so widely spread over the islands that the official reports have necessarily been incomplete. It has been estimated that there have been from 120,000 to double that number of cases and that the mortality has been anywhere from 70,000 to 140,000. On the whole, so far as we have been informed the mortality was about 60 per cent. in the outlying districts and 75 per cent. in the city of Manila. Of the attacked about 80 per cent. were Filipinos and only about 3 per cent. Americans, the mortality among the latter being from 40 to 50 per cent. Great credit appears to have been due to our army of occupation for their strict preventive measures. So effective have they been that when individual cases occurred among our men, they could usually be traced to neglect of sanitary orders. In fact under our military system the disease proved to be quite tractable, while among the natives outside of our jurisdiction it has spread like wild-fire.

A small garrison town occupied by our troops might be absolutely free from the disease, while 10 or more per cent. of the native population about it would be carried off.

According to one of the latest official reports, cholera is propagated through the instrumentality of infected persons, contaminated food or drink, and at times by direct contact with the dead, as in making post-mortem examinations.

Quarantine appears to be effectual or at least very potent in checking the spread of cholera. Suspected persons from infected localities should be held for at least five days, and all merchandise or wearing apparel liable to have been contaminated, or in a moist condition, should be fumigated. If the disease were detected at its outset, the sick isolated, their discharges disinfected, the sale of uncooked fruit and vegetables prohibited, cooked food protected against contamination, and the natives compelled to practise sanitary methods. it is believed that the disease would soon be exterminated.

So far as actual treatment is concerned, hospitals appear to offer the best hopes of life, for in them, while the mortality has been 40 per cent., outside of hospitals it has been 80 per cent.

As to the success of treatment by drugs, our information is less satisfactory. However Dr. Freer (*Medical Record,* Jan., 1903, p. 18), Superintendent of the U. S. Government Laboratories in Manila reports some success with benzoyl-acetyl-peroxide. The peroxide was given in solution and in capsules as an intestinal antiseptic, with stimulants to sustain the patients strength. To obviate the protracted vomiting, sometimes caused by the peroxide, when taken in the mouth, he used high rectal injections of a 1-1000 solution; given every four hours, during the acute stage of the disease. This latter treatment seemed to give relief. It also had a stimulating effect. These experiments were carried on in the tent hospital of San Lazaro.

Dr. Thomas R. Marshall in charge of another tent hospital found that this method was the most efficacious way of administering the peroxide.

The peroxide has certainly had a very extensive trial and it appears to have given a good deal of satisfaction. The guiacol carbonate and calomel treatment has also been employed with some success. The virtues of the two methods are for the most part ascribed to their action as intestinal antiseptics. Apparently they reduce the fatality one-half. However, as the virulence of epidemics vary greatly, it is desirable that these two remedies have a more extended trial. Dr. E. B. Fullerton of Ohio has also called our attention again to the use of the sulphate of quinine by the mouth at 15 to 20 grain doses which he claims control the purging and vomiting in one or two hours.

The plague is now a matter of practical interest to all Americans. It has attacked our new possessions, and reached the shores of this country, so that grave epidemics within our borders are always possible.

As in yellow fever and cholera, we have prosecuted the study of it with unremitting diligence, and equally with them, have had more success in prophylaxis than in treatment. The impression still prevails that rats are the chief media of infection, though fleas may carry the disease from one rat to another. Ants may also be the intermediate host, but not mosquitoes. The disease can enter the system by the air passages or by the digestive tract, but these avenues are rarely employed. It is chiefly through abrasions on the extremities, that become infected. The bare legs and feet of the Filipino natives afford a convenient mode of ingress, while if the wellshod and clothed contract it, it is through abrasions on the hands, arms or face. From these parts the plague poison spreads to the nearest lymphatic glands, the inguinal or the axillary, as the case may be.

One of the greatest difficulties in meeting the rat danger is that in some localities, as in India, for example, the native population is opposed to the killing of animals, so that rewards have to be offered for the live rats. Forunately, in this country and its dependencies, we do not encounter the same difficulty, because our military rule is more efficient and we do not feel obliged to yield to native prejudices or traditions. This is one reason why we have succeeded in mastering the disease in San Francisco, with such a small loss of life. All nationalities are liable to contract the disease, but it is most fatal in the Chinese and it is they who bring it into this country. The recent epidemic at Mazatlan in Mexico was caused by Chinamen who, after reshipping at San Francisco from the Trans-Pacific steamer to the Coast-wise Pacific Mail, landed at Mazatlan with the intention of entering the United States from the south. This indicates to us the methods to be pursued in the prophylaxis of the disease. As yet we do not know much about the vitality of plague. Abel is said to have found that is may survive as long as forty-eight days in the pulverized organs of animals dead of the plague. How much longer it may live under favorable conditions is unknown as yet; but the vitality of the dried poison shows how easily it may be conveyed in merchandise from one port to another. When we compare the way in which plague was checked in the Philippines with the dilatory work in San Francisco, we read an important lesson. From June of 1900 until late in December of 1902, the plague prevailed continuously in San Francisco, the authorities using no adequate means to control it. But when the United States Government took the matter in hand the epidemic was promptly checked. Arrests were made where there was overcrowding in houses, scavengers were employed to remove garbage and sweep streets and disinfect them three times a week. Closets, back areas and unclean alley-ways were limed and then sprayed with carbolic acid; the sick were inspected daily, the dead examined carefully; autopsies insisted on in doubtful cases, and rats exterminated by traps and poison. It is a matter of easy demonstration that when such methods are employed the disease yields in a very brief time.

Some interesting points have been observed by the health board in Sydney. In the epidemic of 1900 it was estimated that 290 whites and 10 Chinese were attacked, but while the mortality among the latter was 80 per cent, the total was only 34 per cent. In the epidemic of 1902 only 141 persons were attacked, the proportion of deaths among the Chinese and the general mortality being about the same.

The patients were treated in the hospital with the Yersin-Roux antiplague serum and exposed persons were inoculated with the Haffkine prophylactic serum, if they so desired it; but the conclusion of the health authorities was that the value of this latter serum is doubtful. Haffkine's serum is a sterilized culture used as a vaccine. Two cubic centimeters are usually injected with a hypodermic syringe, the first one over the insertion of the left deltoid and the second, a week later, over the triceps. This prophylactic has been used extensively in India, but, while it is said to have reduced the mortality and number of attacks from 85 per cent. to 77 per cent., it is much in need of accurate standardization, as the dosage required is uncertain, for an ordinary injection in a mild case may cause death. There appears to be only one serum that can be called curative, the Yersin-Roux, and yet it is not a specific, for it acts more like a cardiac stimulant. It is prepared like the antitoxin of diphtheria. The French Commission have reported that the mortality under its use was 14 per cent. against 70 per cent. without it, and yet the Indian Commission has rejected it. In one instance it appears to have caused a number of deaths. Was it contaminated, or was the dosage too large?

The treatment is systemic; ice is used to relieve the buboes and atropine in four-drop doses of a one per cent. solution is recommended until the pupils are dilated; calomel is also used as an internal antiseptic. Among the Chinese and Filipinos, since 1899, in 788 cases a mortality of 630 or 79.4 per cent. has been reported, but the rate appears to have been largely influenced by racial peculiarities, lack of cleanliness and other unhygienic conditions. In the recent Hongkong epidemic the mortality reported among the Chinese was 93 per cent., of native Indians 77 per cent. Japanese 67 per cent., Europeans 18 per cent., showing as usual the comparative immunity of the latter.

In the construction and maintenance of the Interoceanic Canal, we shall be confronted with serious problems bearing on the prevention and treatment of the pernicious malarial fevers endemic on the Isthmus.

Not only are these fevers very fatal, they also engender general debility in the residents of the infected zone, reducing the economic value of their services and often leaving a permanent impression on the system. Calling to mind the success we have achieved in Cuba, at a recent meeting of the American Association for the Advancement of Science, Dr. Welch of Baltimore urged that the attention of the President of the United States be called to the importance of appointing a medical man, with the proper qualifications, on the Canal Commission. This society might advantageously endorse Dr. Welch's recommendation. We cannot be too prompt in acting upon this matter, because a control of these fevers, which from time immemorial have menaced life and health, will enormously increase the value of the Interoceanic Canal. And recent events justify us in believing that should we use every effort to control malarial fevers, we may meet with as much success as we have had in yellow fever.

Our experience also teaches us that a qualified medical man in the Government service should be appointed to direct and supervise the medical part of this work.

In fact the most burning questions now before American physicians are those concerning tropical and semi-tropical diseases. It is not only that they must be considered in the management of our newly acquired territories or those still under our supervision, but because the present rapidity and ease of transportation and the increasing number of immigrants coming to us is constantly adding to the danger that these diseases will gain a permanent foothold here. The study of tropical diseases, therefore, in this country is not only obligatory on us as American physicians desirous of being conversant with the diseases of our country, but it has a commercial side that will compel our Government to found Schools for Tropical Medicine, unless our Universities or other teaching bodies rise to the emergency. The discovery of the so-called *Uncinariasis* produced by the *Anchylostoma duodenalis* in our Southern States, by Dr. Stiles, of the Bureau of Animal Industry, is an example of what we may expect from intelligent investigation under government supervision.

A disease somewhat resembling glanders, now being studied in Manila, is one instance of several new diseases that have yet to be classified, and for which some efficient form of treatment must be devised. Assist. Surgeon R. P. Strong, U. S. A., Director of the Biological Laboratory in Manila, says that the disease begins as a small nodule in the skin, often near some abrasion. As the infection proceeds it bears "buds" in its course, probably like the "farcybuds" of horses. If the disease is neglected it may spread all over the body, even to the nasal passages, producing a mucous discharge like glanders. The buds, however, do not appear to be due to glanders, but to a vegetable parasite of the yeast series. The treatment consists in opening the bud, curretting and cauterizing it, and bathing it with an antiseptic solution. The disease may persist for months, but most of the cases eventually recover.

This new affection is surgical rather than medical, but it serves to illustrate my point, which is that we shall have to enlarge our classification of diseases, and that the advances in our knowledge of them is now coming through our government medical men.

Tuberculosis is known to be the most prevalent disease we have and the most dangerous to life. Whatever the ratio it bears to death from other sources in this country, and statistics differ on this point, one-third of the deaths in Germany are said to be due to tuberculosis, and the ratio is thought to be even more unfavorable in France, Russia and Austria.

But it is sufficiently dangerous to enlist our most intelligent efforts to repress it. And yet we need a campaign of education among the laity as well as among the sufferers, if we are to make satisfactory progress. And first of all we must understand that tuberculosis is not communicable like scarlet fever, or syphilis. Its methods of propagation are unique. Persons in ordinarily good health do not "take" it from others, or if they do, throw it off again. Otherwise we should all have it. For even the inoculation of an open wound, or inspiration of the tuberculous sputum, or the excretions of the contaminated air passages will not produce a constitutional form of the disease, unless the exposed individual has a diminished power of resistance.

But in our crowded cities, and among the overworked and underfed anywhere, there are many in a lowered condition of vitality, so that with them it may be communicable, and accordingly citizens generally should be shielded from the danger of contagion. So that sanitary regulations, such as the protection of all individuals from the danger of contamination by the excretions of the upper air passages should be observed by all good citizens. But sanitation may be carried to a vicious extreme. Some years ago the public was led to believe that the New York Board of Health was preparing to quarantine the unfortunate consumptive, following a disastrous method once tried in Italy. It was, however, met by such a storm of indignation both from medical men and the laity, that it was never put in practice. For quarantining of these unfortunates would be cruel and harmful in so far as that it might deprive their families of support, while they would be branded like lepers. Experience has also shown that this plan would be impracticable. On the other hand, even in crowded cities the consumptive can be educated and trained so as not to be a dangerous element in society.

Serumtherapy, it is generally admitted, I think, is not curative when there are fibroid, caseous or ulcerative processes existing. It has less of a hold here than abroad. An interesting investigation on this point has been made by Pottenger, of California. Inquiring as to the use of serum among well-known medical men at home and abroad, he has found that about one-third did not recommend it; some strongly favored it; a small number were positively hostile to it. Taking as a basis for computation 1,200 first-stage cases, he found that of 611 treated in sanitoria by the usual dietetic and hygienic methods as compared with 589 treated in the same way, plus the administration of tuberculin the latter showed 20 per cent. more of cures.

It is now generally admitted, however, that pulmonary consumption is curable. Even Robin, the most determined opponent of what may be called curative methods, admits the possibility of a cure in 14 per cent. It is, of course, a matter of common knowledge that consumption in its early stage is frequently curable; but, as a matter of fact, there is no stage in which cures may not take place. Our pathological anatomy has taught us this, for the healed cavities in tuberculous subjects are familiar to all who have made many post-mortem examinations, for a study of tuberculous lungs at the dead house, shows that even when the disease is extending at one point, it is often healing at another.

But if treatment of pulmonary tuberculosis is to be successful it should be appropriate to the stage, and to individual conditions. First-stage cases, as a rule, do better in high and dry localities; in the last stages, patients often do best at sea-levels. These are facts of common knowledge. Some, however, are best treated in sanatoria, others do as well at home. Patients with limited means and deficient self-control improve more rapidly in sanitoria, than at home. The patient learns, during a course of sanitorium treatment how to care for himself, and how to act so as not to endanger his kind.

But there is also an economic side to the question that needs to be considered. The French are always practical, and it may be well to look at this subject a moment from their point of view. If we are correctly informed, Brouardel, Grancher and Landouzy argue as follows: Assume, if you will, that there are 500,000 consumptives to be treated and out of that number 100,000 are bed cases. Now, if each bed costs $1,000, it would require $1,000,000 as the initial endowment, without considering the cost of maintenance or any incidentals. Obviously, such an outlay and such annual charges would be burdens that should be seriously considered in undertaking to solve this problem, for we must be practical, or make ourselves ridiculous.

Fortunately some light has been thrown on this economic view of the question by recent experiences in the suburbs of New York city. Some eight years ago, before the present agitation, about 56 acres were purchased at Bedford, by the Montefiore Home, and $250,000 was expended in suitable buildings, connected by glass corridors and provided with an abundance of light and air. Under a plentiful milk and egg diet, with sanitary regulations and appropriate out-of-door exercise, an apparent cure was shown in 17.3 per cent. and an amelioration of symptoms in 65 per cent. The cost of support for each inmate was only 76.8 cents per day. Here then we have an approximate idea of the cost of maintenance, in substantial buildings, with hygienic surroundings.

A still more economical plan was tried last year by Dr. A. E. MacDonald of the Manhattan State Hospital, Ward's Island, with his tuberculous insane. In the summer of 1901 he put his experiment in operation by erecting a small tent-hospital on elevated and dry ground, in a shady spot, near the river. For his patients he put up two tents, each 14 feet high and having a capacity for 40 beds, 40 sq. ft. being allowed to each bed. The floors were made of boards framed in sections, so that they could be taken up and exposed to the light and air. Another tent served as an eating hall, and others still for the attendants and the various necessities of a field hospital. In the year prior to the experiment of the tent-system the percentage of deaths was 9.4 per cent. while under the tent system it fell to 8.4 per cent.

This method certainly seems to offer great promise both from a therapeutic and economic point of view.

But there is another matter that demands consideration. Admitting the curative value of rest and that freedom from care and worry, and hypernutrition are desirable in febrile cases, the afebrile ones should equally well be provided with some useful employment. When the disease is not progressive, many a patient even with a good-sized cavity, is capable of a fair, if not a good day's work. I have under my observation and have had for many years patients with large cavities, who have led on the whole useful and active lives. One of my patients who has been under my observation for over 20 years and has a good-sized cavity in one lung, has managed to do regular and active manual work during most of that time, and in fact is now an active woman, who considers herself far from being an invalid.

On the whole, sanatoria have certain advantages in the treatment of severe cases over the home plan, chiefly because in them it is easier to carry out the necessary systemic treatment, and is less expensive, so that we are not surprised that in a recent report from a sanatorium at Fort Stanton the cures are put at 24 per cent.

There seems to be little room for doubt that we have already begun to diminish the death-rate from consumption to an appreciable extent. According to German official reports, there has been a change from a previous rate of 31 per 10,000 to 21 per 10,000; and the improved statistics are held to be due to sanatoria, protection against infection, and improvements in the condition of workingmen under the new State Insurance laws.

There is no doubt also that the present agitation going on in this country, having for its object the better housing of the poor, is one of the first steps toward the repression of tuberculosis. And we cannot too strongly insist on the enforcement of laws that require that all dwelling rooms are supplied with a proper amount of air and light.

While the recent reported statistics in typhoid fever indicate that from a mortality of about 20 per cent., based on the statistics of the European hospitals in the time of Murchison modern treatment has reduced it to an average of about 10 per cent., a novel treatment based on the idea that the disease is due to a toxin, the produce of the Eberth bacillus, acting on the adenoid tissue of the intestines, is credited with a reduction in the rate below this point. Abt, of Chicago, in a series of 40 cases in children treated with a view to disinfecting the system with the benzoyl-acetyl-peroxide, records a mortality of only five per cent. The drug is claimed to be both an intestinal disinfectant, an antipyretic and a diuretic, and to be innocuous. In 128 cases treated by Harris with large quantities of this drug, combined with a laxative, in the early stages, the temperature it is claimed returned to normal in from 10 to 12 days. Though from the statements already made, it may not be well borne by the stomach, this objection may possibly be overcome by administering it in capsules. On the theory that the primary colony lodges in the respiratory tract, it has been used in the form of a spray.

In the matter of internal antiseptics, there is still a difference of opinion. Individually, I have always maintained that it exists and have held the view that calomel, quinine, and muriatic acid are good internal antiseptics; also that creosote, bismuth, ox-gall, and iodine have similar properties. Internal antiseptics, I believe, are no longer to be used theoretically; but at the same time it is well to be on one's guard against the increased array of so-called internal antiseptics which are now being exploited. Many of them, I fear, have no real merit.

In some quarters there is a persistent opposition, however, to products of the coal-tar series, on the ground that their apyretic action limits oxidation, which is necessary for the destruction of the toxins. The recent plan of Hirschfeld, of the Brisbane Hospital in Australia, is in the direction of increased oxidation. He accomplishes it by the use of hot baths instead of cold and reports a mortality of 3.4 per cent. when baths of 80° F. were used, as against 7.2 per cent. when in 1887 he used cold baths. After an experience with thousands of these warm baths he has observed the temperature to fall from 1° to 2° F. In the aged, children or weaklings, he used a bath at 90° F. His claim is that the patient's capillaries are more distended in the warm bath, so that he parts with his heat more readily; while under the cold bath, the capillaries are contracted, the surface cooled, while internally there is an increased production of heat.

This method certainly deserves a fair trial.

Probably no remedy introduced within the last ten years has established itself so firmly in the public confidence as the antitoxin of diphtheria, and yet I remember when a little more than ten years ago, at a meeting of our State Medical Society, I spoke of it as an experiment. During the past year, Kerley has given us some statistics illustrating the comparative value of the remedy from our present point of view. In 103 cases treated by him previous to the introduction of antitoxin 60 or 58 per cent. died, while of 56 cases treated by him with antitoxin there were only four deaths or a mortality of only 7 per cent. These may possibly be regarded as extreme figures, both as to the results of treatment with and without anti-toxin. But independent of the figures just given we have a large mass of confirmatory evidence such as a rate of 29.29 from the Hospital of the Metropolitan District Board of London in 1894, and 38 per cent. from 157 organized bureaus of health prior to the serum treatment, as against 14.6 per cent. in 1900, while in the 157 reports from the same boards, the mortality under the serum treatment had fallen to 9.8 per cent.

Certainly from the statistics at hand we are justified in saying that the mortality since 1893 has fallen 50 per cent., probably much more than this. It would appear, therefore, that the discovery of antitoxin may be regarded as next to vaccination in its immediately beneficial effects. And it seems likely that the results during the next ten years will be even better. The early accidents such as fever, arthritis, hematuria, albuminuria, reported when the serum was first introduced are now exceedingly rare, especially if the sera of our best American makers are used. The initial dose for an infant under one year is now established at 2,000 units, for one over one year 3,000 units and for an adult 4,000 to 6,000 units, these amounts to be repeated if necessary at 12-hour intervals or even less, until the membrane disappears. In some cases apparently hopeless, especially in laryngeal implication, in adults as much as 80,000 units and even more may be given in divided doses in a single case. This method as now practiced, appears to be attended with no ill-effects. In one case 8,000 units were given by McCullom as an initial dose for an adult in an apparently hopeless case, 4,000 some hours later and repeated every four to six hours until 92,000 units were given. Recovery was complete.

Taking up now the subject of chronic diseases, some little advance has been made during the year in the treatment of heart diseases. At least it may be said that there is a growing tendency to adopt the more modern methods of treatment, especially in chronic heart disease, and use indirect rather than direct methods, so that hydrotherapy, resistance and other exercises, diet, general tonics and purgatives are assuming their proper prominence, while the nitrites are substituted in great measure for digitalis, strophanthus and heart stimulants of this class. Physicians are also beginning to appreciate the fact that in no other disease do the indications differ so widely. The more we know of the frequently dangerous effects of certain powerful drugs, the less we will use them. If we think more of the condition of heart muscle, in the light of all the other systemic conditions presenting themselves, and less of the valve lesions, we will get nearer to the proper conception of the proper treatment to pursue.

In the management of chronic heart diseases we should appreciate the character of the blood-vessels, the condition of the kidneys, the chylopoetic tract, lungs and skin, before we resort to powerful drugs. Although digitalis and its congeners are valuable and are capable of accomplishing much, they are sometimes attended with such danger that at first certainly they should be given in small doses.

When the arteries and the heart are free, the nutrition of the heart may, it is true, be favorably influenced, but when their lumens are contracted and infiltrated, digitalis will still further contract them.

The attention of both surgeons and physicians continues to be called to the topic of decortication of the kidneys in chronic Bright's disease. Since Edebohls published his few early cases, other surgeons have followed him and some experimental work has been done in laboratories.

The impression seems to prevail, however, thus far, from experimental work that after decortication in animals there is rapid regeneration of the capsule, which becomes quite as dense and resistant as the normal capsule, and no more vascular.

This whole topic is now in the experimental stage so that we are not justified as yet in advising the operation until it offers better prospects for the patient than are now presented.

Surgeons are also now doing radical operations for the cure of ascites, and the question is before us whether they are useful and if so, under what circumstances. In the patients that have thus far been operated on, it has not always been clear whether the ascites was due to cirrhosis or some other cause. Renal and cardiac dropsies are known to yield in many cases to appropriate medical remedies, while simple paracentesis effects cures. According to the report of Sears and Lord in 78 cases they have collected, operative measures do not appear to be justifiable in the presence of jaundice or intestinal hemorrhage. On the other hand if the kidneys and heart are sound, general nutrition good, and medical remedies have failed, an operation may be considered. That hepatic cirrhosis may in some cases be cured by an operation is admitted, but usually in such instances other organs are so affected that the hope of recovery is small. In any event the mortality following the operation has been large.

The operation appears to have been done under a variety of conditions. This, however, like the decortication of the kidney in Bright's disease, is in the experimental stage, and we shall look to the surgeons for more precise indications for it. At present there is no ground for believing that it is calculated to supercede medical remedies or simple paracentesis.

Some advances are to be registered in the problem of the treatment of appendicitis, in so far as there is beginning to be a reaction from the *furor surgicus* that at one time infected the country, it being admitted by a number of surgeons that as a rule simple acute appendicitis is best treated by internal medication, the chronic and relapsing forms being more properly the field for surgical intervention.

At a recent meeting of the Societe de Chirurgie Lucas Championniere reported that of 44 cases operated on by him during the suppurative stage 12 or 27 per cent. died. This probably is a good showing for operation in this stage—while on the other hand, the operations à froid, as the French say, have a trivial mortality. I am inclined to believe with Broca, that "l'operation immediate est plus grave que l'expectation armée," and also with him that with suitable and early treatment, complete resolution is frequent, and amelioration is the rule. Treves, now held by many to be the foremost surgeon in England, also believes in a medical treatment. He says the number of cases which undergo spontaneous cure form an overwhelming majority, and cannot be lost sight of, nor can the opening of the abdomen through the muscular parietes over the cecum be regarded as a trifling procedure. Further, that in a fair proportion of instances in which there has been a relapse no surgical interference is called for. These are opinions from distinguished surgeons, and yet I fear there are medical men who do not believe in the medical treatment of appendicitis.

But there is a word more to be said of the surgical treatment of appendicitis. How many unfortunates that recover from the immediate effects of the operation, are permanently invalided from fistulous openings, hernia, etc., due often to operations inopportunely planned or poorly executed, and how many secondary operations are done in these cases by the best of our surgeons.

At the present time we are putting less faith in the efficacy of mere drugs, largely because there is a wide difference between the drugs of commerce. In this connection it may be important to call attention to the fact that pharmacists, even in our largest cities, are not sufficiently controlled by the sanitary authorities. For example, in 373 drugstores recently visited by the inspectors of the New York Board of Health only 58 sold phenacetine that corresponded to its recognized analysis. We are therefore reaching a period in the medical history of this country, when there should be some stricter supervision of drugs and medicines, and they should be passed upon before exposure for sale by competent experts. This is especially important for the products of biological activity, as was demonstrated in the city of St. Louis last year, where a number of cases of tetanus are said to have developed from the use of antitoxin for diphtheria. Tetanus also appears to have similarly followed the practice of vaccination for protection against smallpox. There is no doubt that the best manufacturers of pharmaceutical products, sera, glandular extracts and vaccines, employ many of the best-equipped men in the land, and that their methods are exceptionally good, and their appliances of the most approved kind. Still, less reliable men may put their goods on the market to the danger of the community at large. It is apparent, therefore, that all such products should be under a central government control, and we cannot too highly approve the efforts made by this Society in this direction from the date of its foundation. The bill that was recently introduced into the Senate "to regulate the sale of viruses, serums, antitoxins and analogous products, in the District of Columbia, and to regulate interstate traffic in such articles," etc., was a move in the right direction. The objects of this bill and our efforts were commendable and it is to be hoped it will not be long before these objects are attained. The scientific physician of to-day is demanding as his right that therapeutic products be reliable and free from contamination, and so far as practicable, of standard efficiency.

In this connection, I cannot avoid saying that we require in the State of New York at least, a State supervision of the medical education of pharmacists. We cannot be too peremptory in demanding a preliminary examination for pharmacy students and a State examination to permit of their practising.

In fact, I cannot do better than quote from one of our members, Dr. E. M. Houghton, who says: "I believe we should look upon the subject of pharmacology in the same light as we do physiology and pathology, and pursue the study of it as a pure science; determine by careful and systematic laboratory experimentation the changes in the physiological action of the various organs of the higher vertebrates produced by a drug, before an attempt is made to employ it for clinical purposes. A much clearer knowledge of the pharmacological action of a drug can be gained in the laboratory than at the bedside alone, since by appropriate methods, experiments on dogs and the lower animals generally, it is possible to determine the reaction of the animal body with a much greater degree of accuracy than is ever possible where the drug is administered to patients whose physiological functions have been obscured by the disease processes present, although bedside study is necessary to complete our knowledge."

In the matter of heart tonics especially, as a result of physiological experiment on animals, Dr. Houghton has shown the practicability of standardizing them.

In reference to the pharmacological action of the suprarenal gland, the same author says: "Since we have no chemical means for assaying these products, it is advisable to have a pharmacological method that can be readily employed." And he has inaugurated a method of this kind, based on the submaximum blood pressure obtained by injecting intravenously different qualities of the adrenal preparations dissolved in water and comparing the increased blood pressure produced in the carotid artery of a dog or other animal, the pressure being recorded by the manometer on a revolving drum covered with smoked paper. This method has given the most satisfactory results. Similar experiments were carried out with the sodium nitrite. In this way, therefore, substances of animal, vegetable, and mineral nature, may be so tested that their precise value in medicine for clinical purposes can be ascertained with an extraordinary degree of accuracy.

It is not out of place in this connection to call attention to the practice advocated by the International Association for the Unification of Formulæ for Heroic Medicines, which met in Brussels on September 15 last, in the establishment at ten per cent. strength all the tinctures of active or potent remedies. The importance of this is seen when we realize that the U. S. Pharmacopœia tincture of aconite is seven times as strong as the British preparation, three and a half times as strong as the German, and nearly double the strength of the French. The importance of an international standard, therefore, when we consider the dangers of the indiscriminate use of such tinctures by physicians who for the most part are entirely ignorant of the varying degrees of potency of the pharmacopœial tinctures of these various countries, is evident. Therefore, so far as possible, we should now advocate an international standard and urge its importance.

At the present moment there are many obstacles in the way of a combined movement of this kind under the auspices of the U. S. Government, but the Committee on Anti-toxins of the U. S. Pharmacopœia is proposing to adopt a national standard for our anti-toxin diphtheria similar to the one used in Germany. This will be a step in the right direction.

It has been said that nothing better illustrates the tremendous progress made in modern surgery than its invasion of the field once occupied by the medical practitioner. The department of medicine certainly takes pride in the success of every other department and welcomes advances from any quarter, but if progress means the saving of life, or the prevention of disease, can any record be more brilliant than the recent successes of our medical men in dealing with the yellow fever, cholera and plague problems? For during the few years that we, as Americans, have been recognized as a world-power we have not only shown a degree of capacity for ruling alien races that has been unknown heretofore, but have devised methods for controlling some of their most terrible scourges, in a way that encourages us to believe we may extinguish them entirely.

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**Treatment of Cicatricial Contractures.**—An operation of interest and apparently of value, has been suggested in selected cases of cicatricial contraction of the upper extremities, by A. H. TRAVER (Am. Med., April 11, 1903). He employed it in a boy who, as the result of a burn, presented an extensive cicatrix of the arm, which caused extreme flexion at the elbow and hyperextension at the wrist. The arm was practically useless. At the first operation a band of cicatricial tissue around the elbow was dissected away, permitting the arm to be fully extended. A flap of skin was then raised from the side of the chest, the ends being left intact to keep up the circulation. The skin on either side of the flap was then dissected up and by means of tension, sutures brought together as much as possible, closing in this way about one-half the gap. The arm was then drawn beneath the flap, thus covering the surface on the arm from which the cicatrix had been dissected away. A strip of gauze was drawn through beneath the arm to prevent its growing fast to the chest. The arm and chest were put up in a plaster of Paris dressing. Eighteen days later these were removed and the ends of the flap severed from the chest, brought about the arm and sutured in place, thus completely covering the denuded area. A third operation was done about two months later. A similar strip was dissected away around the wrist, the contracted tendons were lengthened, and the hand and wrist slipped underneath a flap, like that made on the chest, which had been prepared on the right thigh. A plaster dressing was applied and removed two weeks later, when the flap was severed from the thigh and sutured about the wrist in the same manner as at the elbow. Complete healing of all resulted and in a few weeks time the boy was able to make good use of both arm and hand, where formerly there was absolute debility. The method is certainly worthy of further trial.

**The Treatment of Felon.**—Four kinds of paronychia are commonly observed. (1) That seated between the epidermis and true skin, called "runround;" (2) that situated in the subcutaneous areolar tissue; (3) that occupying the sheath of the tendon, and (4) the most severe, situated between the periosteum and bone. The three last are only different degrees of the same condition known as whitlow or felon. E. W. LEE (N. Y. Med. Jour., March 21, 1903) believes that undue attention is usually paid to the treatment of the more severe cases in the above group. A diffuse cellulitis or general septicemia may follow neglect or a limited incision. A general anesthetic is almost always indicated. Pressure upon the brachial artery and subsequent application of an Esmarch bandage greatly facilitates the operation. A free incision should then be made down to the bottom of the trouble and all pus and débris washed out with peroxide of hydrogen. The cavity is then washed with a 1:1,000 bichloride solution and a swabbing with pure carbolic followed by alcohol renders the parts sufficiently aseptic to allow the wound to be closed and held in position with a snug moist bichloride compress and bandages. Symptoms usually rapidly abate after this method of treatment and in four or five days the wound will be found closed and free from drainage.

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## CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

WE are glad to be able to present our readers this week with a detailed account of the proceedings of the Sixth Triennial Meeting of the Congress of American Physicians and Surgeons, which has been in session in Washington during the present week. The transactions show what a high grade of scientific work on many subjects is being accomplished in all parts of this country and how distinctly the best American medicine is contributing to the medical knowledge of the world, to a degree that is attracting the attention of foreign medical men quite as much as American enterprise in other fields has drawn to itself the comment of other professions and workers. This is a phase of the "American Invasion" that cannot be commended too highly and leaves no room for regret. It makes for the highest humanitarian purposes and the only greeting to it in its youthful vigor can be the Roman plaudit of the successful young athlete, *Macte Virtute puer sic iter ad astra.* "More power to you, boy; that is the road to fame."

The general sessions of the Association of American Physicians and Surgeons, and the special meetings of the Medical and Surgical Associations have been rich in interest. The symposia on the Pancreas and on the Gall-Bladder were eminently worthy of the present state of our knowledge and the progressive tendencies which characterize recent work in these rich fields. It is not surprising that with such distinguished contributors as Fitz, to whose monograph the medical world owes the beginning of its definite knowledge of pancreatic disease, Opie, Flexner and Prof. Mikulicz, the symposium on the Pancreas marked a distinct advance in medical knowledge. The partakers in the discussion of gall-bladder diseases were not less distinguished, and with Prof. Ewald, of Berlin, and Prof. Kehr, of Halberstadt, among their number, represent adepts in the special branches of the subject they handled. An English surgeon of distinction, whose particular line of work is in the same field, said that he could not decide which of the afternoons would be for him the most pleasant and informing of his surgical career.

The meetings of the American Surgical Association were crowded and the papers and discussions all of a high order of merit. There is practically universal consensus now, as the first day's discussion showed, that the toilette of the peritoneum should be moist rather than dry. All methods of wiping out the peritoneal cavity have been practically abandoned and flushing out abundantly with normal salt solution substituted. Among the special contributions of surpassing merit were the papers of Dr. Moynihan, of Leeds, Eng., on the Recognition and Treatment of Non-Malignant Diseases of the Stomach, and of Prof. Mikulicz, of Breslau, on cardiospasm, jejunal ulcer and a new technic for severe cases of intussusception.

At the meeting of the American Physicians the contributions on the blood were especially noteworthy. Attention was called to the fact that many cases of acute lymphatic leucemia are evidently occurring in this country, though most of them remain unrecognized. Not a few of them probably masquerade under the guise of fatal typhoid fever and some of them doubtless as acute septicemia, especially after childbirth. At the second day's session Dr. Osler presented the clinical features of what he considers a new symptom complex. This consists of chronic cyanosis without emphysema, renal or cardiac disease, but with a red blood cell count of nearly or quite 10,000,000. His observations of three cases were confirmed by the report of cases of more or less similarity from many parts of the country.

In parasitology, besides Dr. Councilman's description of the protozoon that is probably the cause of smallpox, which very naturally drew a crowded session to the meeting place of the American Association of Pathologists and Bacteriologists and which we are glad to be able to present to readers of the MEDICAL NEWS this week (see p. 959), there were distinct contributions to our knowledge of the tubercle bacillus and of the pathogeneity of different animal forms for man. Dr. Theobold Smith has demonstrated the bacillus of bovine tuberculosis in the mesenteric glands of a child, thus showing the possibility of milk infection and the rashness of Koch's declaration of the absolute diversity of the species of this bacilli. Dr. Trudeau's work on experimental immunity in tuberculosis, while encouraging the hope that eventually there will be a method of immunizing against the white plague of the north, also confirmed the idea of the essential identity of the various bacillary groups in tuberculosis, since he was able to produce degrees of immunization in various animals by the injection of avian tuberculosis.

The whole triennial meeting was a most encouraging and complete success. The proceedings are a sure index of the thoroughly scientific character of American medicine at the beginning of the twentieth century. Taken in connection with the eminently successful meeting of the American Medical Association last week, this meeting stamps the seal of the highest conservatism in conjunction with characteristic American energy and enterprise on the labors of the American medical profession. We can only wish continued success to the movement so happily begun in the new century.

## THE NEXT QUESTION IN SURGERY.

THE surgical section of the American Medical Association, at its meeting in New Orleans last week, unanimously agreed that operation for appendicitis should be done the moment the condition was diagnosed if the symptoms pointed to a limitation of the disease to the appendix itself. After involvement of the peri-appendicular structures the treatment of the case should be along the lines suggested by Ochsner, namely, frequent gastric lavage, absolutely no food or medicine by the mouth; rectal feeding unless it produces pain. Patients who had passed the stage of primary involvement of the appendix, when subjected to this treatment, recovered sufficiently to be operated upon in 97 per cent. of cases, said operation being followed by practically no fatality.

For those of us who practise general medicine, this outlines our course and defines our responsibilities in a most satisfactory manner. Although by no means invariable, yet it is the rule that the peri-appendicular tissues are not involved during the first forty-eight hours, it therefore becomes our duty to operate upon such cases the moment the diagnosis is made. After peri-appendicular involvement, which in most cases means after the forty-eighth hour, the patient should be subjected to the rigid hygiene of Ochsner. A general application of this most recent decision of the surgical section will unquestionably be life-saving in its results.

The next question the surgeon has set for himself is, if possible, of even greater practical importance than that of appendicitis. Digestive disorders have ever been the bane of our people and the humiliation of our profession. What prospect of relief is there in the future of gastric surgery?

Such men as Mayo, Rodman, Ochsner, and others are now teaching that practically all of the surgical diseases of the stomach are the product of gastric ulcer. Who will say that Mayo, that master of American surgery, is not a true prophet when he proclaimed that "We as externists shall soon be able to say to the internist, 'Send to us your intractable cases of neurasthenia, of hysteria, of confirmed gastric irritability and dyspepsia and we will at the end of a simple and virtually safe operation hand you the excised ulcer which you were unable to cure, and which was the causative factor in the condition.'" When that time comes, and come it will, the surgery of the stomach will have reached its goal.

The immense literature of internal medicine furnishes page after page devoted to the treatment of conditions which, until very recently, were looked upon as separate entities. It will not be one of the least of the many great achievements of American surgery when it shall prove the etiological unity, of apparently such widely different conditions as gastric carcinoma, perforation, hemorrhage and ulcer.

The corollary of all this for the general practitioner is that he should make up his mind that those of his patients who have vague gastric symptoms which do not respond to rational internal treatment may not be longer left to their own devices. Such people usually have ulcers of the stomach or duodenum. Unless the practitioner wishes to take upon himself the responsibility of leaving within that patient what is now recognized as the paramount cause of malignant disease as well as many other incurable conditions he will consult a surgeon and advise his patients to submit to a harmless exploratory investigation, which, in an increasing number of cases, will end in absolute relief by operation.

### DR. MARTIN'S APPOINTMENT.

The Medical News would fall short of its duty if it went to press this week without some expression of approval of the appointment of Dr. Edward Martin as Director of Charities and Correction for the City of Philadelphia by Mayor Weaver. In the past this important department of the city, the general municipal management of her health and sanitation, has had so little in it to make her citizens proud, that we seize the opportunity for commendation with delight.

Dr. Martin's reputation for good judgment, energy, and above all, for sterling honesty, gives us every reason to look upon his acceptance of this important position as the herald of better things under the new rule. This conclusion is confirmed when we consider the remarkable board of advisors with which Dr. Martin has surrounded himself. The profession of America does not furnish six more worthy names than Drs. S. Weir Mitchell, Hobart Amory Hare, J. William White, Charles Penrose, John H. Musser and J. M. Anders. It is understood that the first and only condition under which these gentlemen lend their moral support and practical aid to the Director is that his efforts shall not be hampered by the exigencies of political ends.

Besides these able men of the advisory board, Dr. Martin will consult specialists and will use their knowledge to make a campaign against consumption, pneumonia and allied diseases, and above all, he will take up at once the great question of infant mortality and diseases of children. This latter problem he considers rightfully the most important in dealing with the health of a city. Dr. A. C. Abbott will be retained as Chief of the Health Bureau.

Accepting the preliminary steps in reform as an earnest of results to follow in the near future, the Medical News offers the people of Philadelphia sincere congratulations and will watch with increasing interest the progress in the Department of Charities and Correction.

**Summer Home for Cripples.**—Charitable women of New York have rented a house in Ridgefield, N. J., as a summer home for destitute cripples. All the inmates of the Darrach Home for Crippled Children on West Thirty-third street, New York, will shortly be removed to the new institution.

## ECHOES AND NEWS.

### NEW YORK.

**Scientist to be Tried Again.**—County Judge Platt, at White Plains, N. Y., has signed an order for a new trial for Luther Pierson, a Christian Scientist, who was convicted of being responsible for the death of his child in 1901 from pneumonia without proper medical treatment. The Apellate Division reversed the decision of the lower court, which had convicted Pierson.

**Pavilion for the Deaf.**—The Schermerhorn Aural Pavilion that has been added to the New York Eye and Ear Infirmary, through a gift of $75,000 by the late Mr. Wm. C. Schermerhorn, was dedicated on last Monday. Among those who took part in the ceremonies was Miss Helen Keller, whose remarks gave evidence of an eloquent sympathy with this effort to bring relief to those in danger of sharing her affliction.

**Scarlet Fever on Receiving Ship.**—Scarlet fever has broken out upon the receiving ship Columbia, at the Cob Dock, Brooklyn Navy Yard. There are over one thousand sailors on board. Three of the crew have been taken down with the disease within a week. The first case came to the notice of the ship's physician on April 30. The sailor was at once sent to the Naval Hospital, on Flushing avenue. The strictest quarantine has been placed upon the ship.

**Loving Cup for Dr. Peabody.**—Dr. George L. Peabody, who has resigned the chair of materia medica in the College of Physicians and Surgeons, Columbia University, received a handsome silver loving cup from the student body on May 7, as a mark of their affection and respect. A. H. Auchincloss of the second-year class made the speech of presentation. Dr. Peabody in response expressed the hope that his successor might receive the same deferential regard and maintain the same friendly relations that he himself had experienced during a professorship of seventeen years. The cup is about 18 inches high, vase-like in form, and appropriately engraved.

**The Goodsell-Bedell Bill.**—At the last regular meeting of the New York Academy of Medicine (May 7), the First Vice-President, Charles L. Dana, M.D., presiding, the following resolutions offered by S. A. Knopf, M.D., and seconded by A. Jacobi, M.D., were unanimously adopted:

*Whereas,* There has been recently passed by the legislature of the State of New York an act (Goodsell-Bedell Bill) to amend the public health law in relation to the establishment of public sanatoria, hospitals, or camps for the treatment of tuberculosis, which act reads as follows: "A hospital, camp, or other establishment for the treatment of patients suffering from the disease known as pulmonary tuberculosis shall not be established in any town, by any person, association, corporation, or municipality unless the board of supervisors of the county and the town board of the town shall each adopt a resolution authorizing the establishment thereof, and describing the limits of the locality in which the same may be established," and

*Whereas,* The effect of this bill, if it becomes a law, will make it impossible for any city in the State, or any fraternal order, charitable society, or philanthropic individual, to establish a hospital, camp, or other establishment for the treatment of consumptives, outside the city limits, except under conditions which are practically prohibitive, and

*Whereas,* By Chapter 327 of the Laws of 1900, cities of the first class are authorized to erect sanatoria outside the city limits, such action and the selection of a site to be subject to the approval of the State Board of Health, and by the same law, hospitals and institutions, now, or hereafter established or maintained, are made subject to the approval of the local board of health, and

*Whereas,* Private property rights are sufficiently protected by general laws, and the process of injunction is open, in case it can be positively shown that unwarranted injury would be inflicted by the establishment of a hospital on a particular site, and the necessity of obtaining the consent of the State Board of Health being an ample guarantee that a site shall not be selected which will threaten or unduly expose the health of any particular neighborhood, and

*Whereas,* It has been demonstrated in this country and in Europe that properly conducted sanatoria, hospitals and camps for consumptives are not a danger to the neighborhood, and that such institutions are places where the consumptive poor receive a hygienic education and have the best possible chance to be cured and become again useful citizens and supporters of families, and

*Whereas,* There is at present a great deficiency of hospital accommodation in New York State for this class of patients, be it

*Resolved,* That the New York Academy of Medicine deeply deplores the passage of the above bill, and urgently requests His Excellency, the Governor, to withhold his signature to the act, which, in case it became a law, would involve the loss of thousands of lives and increase the spread of tuberculosis within the crowded districts of our cities and towns, and which would have to be considered an act of the greatest injustice and inhumanity.

**College of Physicians and Surgeons and Hospital Appointments.**—The students of the Medical Department of Columbia University have been unusually prominent this year in the number of competitive hospital appointments secured, as may be seen by the following list: John K. Adams, 1902, General Memorial Hospital; Paul A. Adams, 1903, Brooklyn Hospital; D. G. Allen, 1903, Roosevelt Hospital; F. R. Baker, 1903, Westchester County Hospital; William H. Beattie, 1903, Paterson General Hospital; L. Blumgart, 1903, German Hospital; Milton Bodenheimer, 1903, Mount Sinai Hospital; A. J. Brown, 1903, Presbyterian Hospital; Frank E. Brown, 1903, Methodist Episcopal Hospital; H. G. Bugbee, 1903, St. Luke's Hospital; J. G. M. Bullowa, 1903, Mount Sinai Hospital; C. G. Burdick, 1903, New York Hospital; J. R. Cannon, 1903, St. Luke's Hospital; G. B. Capito, 1903, St. Luke's Hospital; A. F. Chace, 1903, Post-Graduate Hospital; T. A. Clay, 1903, Kings County Hospital, Brooklyn; G. H. Cocks, 1903, Post-Graduate Hospital; E. A. Colton, 1903, Gouverneur Hospital; J. J. Cosgrove, 1903, St. Francis Hospital; H. C. Cowles, 1903, General Memorial Hospital; F. H. David, 1903, St. Mark's Hospital; F. A. Deal, 1903, St. Francis Hospital; F. E. DuBois, 1903, Roosevelt Hospital; Roger Durham, 1903, Methodist Episcopal Hospital; L. W. Elias, 1903, Lincoln Hospital; W. B. Elmore, 1903, Roosevelt Hospital; Frank Erdwurm, 1903, Bellevue Hospital, First Division; J. P. Erskine, 1903, New York Hospital; C. W. Fairchild, 1903, Westchester County Hospital; B. S. Fasset, 1903, St. Francis Hospital; L. H. Finch, 1903, City Hospital, Blackwell's Island; Fred A. Finn, 1903, St. Francis Hospital; Louis Franklin, 1903, Christ Hospital; G. A. Fried, 1903, Mount Sinai Hospital; G. H. Gage, 1903, Elizabeth General Hospital; W. V. P. Garretson, 1903, Nursery and Child's Hospital; C. Z. Garside, 1903, City Hospital, Blackwell's Island; W. C. Garvin, 1903, City Hospital, Blackwell's Island; J. E. Grant, 1900, Adirondack Cottage and Sanitarium; W. S. Gregory, 1903, St. Luke's Hospital; F. D. Gulliver, 1903, St. Vincent's Hospital; W. J. Haber, 1903, Mount Sinai Hospital; S. W. Hamilton, 1903, Randall's Island Hospital; Geo. P. Harran, 1903, Newark City Hospital; Royal S. Haynes, 1903, Presbyterian Hospital; A. C. Henderson, 1903, Gouverneur Hospital; S. L. Higgins, 1903, City Hospital, Blackwell's Island; H. V. V. Holcomb, 1903, Bellevue Hospital, First Division; W. H. Holdridge, 1903, St. Francis Hospital; E. P. Huff, 1903, Randall's Island Hospital; O. von Huffman, 1903, St. Luke's Hospital; F. B. Humphreys, 1903, New York Hospital; P. F. Irving, 1903, Roosevelt Hospital; J. S. Jones, 1902, General Memorial Hospital; H. K. W. Kellogg, 1903, St. Luke's Hospital; J. M. Kent, 1903, New York Hospital; H. D. Kenyon, 1903, New York Polyclinic; J. D. Kernan, 1903, Presbyterian Hospital; Leo Kessel, 1903, Mount Sinai Hospital; I. W. Kingsbury, 1903, Presbyterian Hospital; W. H. W. Knipe, 1903, Roosevelt Hospital; Cornell Lawrence, 1903, Harlem Hospital; J. R. Le Comte, 1903, Lincoln Hospital; H. L. Leiter, 1903, Mount Sinai Hospital; P. M. Lennox, 1903, Williamsburg Hospital, Brooklyn; M. F. Lent, 1903, St. Francis Hospital; A. J. Leonard, 1903, St. Vincent's Hospital; H. Lorber, 1903, Beth Israel Hospital; F. F. Lyne, 1903, General Memorial Hospital; S. B. Marks, 1903, Post-Graduate Hospital; W. E. McCollom, 1903, St. John's Hospital, Brooklyn; H. O. Mosenthal, 1903, New York Hospital; W. G. Nash, 1903, St. Michael's Hospital; N. W. Nelson, 1903, Beth Israel Hospital; F. J. Newman, 1903, Beth Israel Hospital; A. Nicoll, 1903, St. Vincent's Hospital; L. F. Nicoll, 1903, Bellevue Hospital, Fourth Division; George C. Owens, 1903, St. Mary's Hospital, Brooklyn; L. R. Palmer, 1903, St. Mark's Hospital; J. R. Peabody, 1903, Roosevelt Hospital; D. C. Pierpont, 1903, Bellevue Hospital, First Division; R. E. Pou, 1903, Roosevelt Hospital; R. L. Reid, 1903, New York Hospital; Robert F. Ringland, 1903, S. R. Smith Infirmary, Staten Island; S. Saldino, 1903, Columbus Hospital; G. A. Schnepel, 1903, Harlem Hospital; M. S. Seidler, 1903, General Memorial Hospital; R. J. Shannahan, 1903, Springfield City Hospital; Fred A. Simmons, 1903, S. R. Smith Infirmary, Staten Island; J. J. Sinnot, 1903, St. Vincent's Hospital; Leroy J. Smith, 1903, Bellevue Hospital, First Division; Louis Stork, 1903, Norwegian Hospital; G. T. Strodle, 1903, German Hospital; Charles A. Sylvia, 1902, Manhattan Eye and Ear Hospital; A. W. Taves, 1903, Gouverneur Hospital; Benjamin S. Van Dyke, 1903, Bridgeport Hospital; J. N. Wickham, 1903, Elizabeth General Hospital; H. R. Widmer, 1903, St. Barnabas Hospital; Irving D. Williams, 1903, Bridgeport Hospital; W. H. Wells, 1902, Hudson Street Hospital; B. H. Whitbeck, 1903, Bellevue Hospital, Fourth Division; J. W. Young, 1903, Bellevue Hospital, First Division; H. W. Zinsser, 1903, Roosevelt Hospital.

## PHILADELPHIA.

**Woman's Medical College.**—The annual commencement of the Woman's Medical College of Pennsylvania will be held in the Academy of Music on Wednesday, May 20. Surgeon-General George M. Sternberg, U. S. A., retired, will address the graduating class.

Dr. Mary W. Griscom, until this year Associate Professor of Obstetrics at the Woman's Medical College, has been appointed chief of the obstetrical staff at the Woman's Hospital, with two associates, Dr. Elizabeth L. Peck, senior member of the staff of the West Philadelphia Hospital for Women, who is also on the staff of the Philadelphia Hospital, and Dr. Sarah H. Lockrey.

**Clinics by Dr. Kehr.**—Professor Hans Kehr, the German specialist on diseases of the gall-bladder, held several clinics in this city during the past week. Three were held at the Polyclinic Hospital, where a number of difficult cases were operated upon. One of them exhibited the largest gall-bladder ever seen by the noted surgeon. At the Jefferson Hospital, May 9, one man was operated upon, several gallstones were removed from his gall-bladder and ducts and drainage established. Dr. W. W. Keen acted as interpreter for Dr. Kehr. A noticeable difference in the operation was the exceedingly long abdominal incision as compared with those made by American surgeons.

**Protest Against Home Study of Students.**—The Committee on Education and Home Study of the Parents' Association met May 8, and decided to bring before the Board of Education a petition signed by 2,000 clergymen, physicians and parents protesting against overwork and home study of pupils. Professor Daniel Bachelor presided and advocated the abolition of yearly examinations, which, he said, bring the pupils into a state of nervous strain and exhaustion. A physician filed a statement of six cases which had been under medical treatment for serious breakdown caused by overstudy. The President of the Board of Education has expressed himself as being in sympathy with the movement for a reduction of the hours of study, and has promised to present the association's petition to the Board at its next meeting.

**Pennsylvania Hospital.**—At the recent annual meeting of the contributors to this institution the managers reported that the expenditures of the Pine Street Hospital for maintenance during the past year had been $135,184.97, which is $37,000 more than the income, and they called the attention of the friends of the hospital to the importance of adding to its permanent endowment, in order that its work may not be curtailed. During the year just closed 40,701 persons were treated, and of those only a small number paid for board and treatment. The Public Ledger, in an exceedingly pertinent editorial, says: "The oldest and still the foremost of the great charities of Philadelphia is the Pennsylvania Hospital, which has carried on its noble work so long and upon so generous a scale that it has come to be generally regarded as a public institution. And yet it is the one conspicuous hospital in the State that is supported wholly by private benefaction, and never is found in the crowd of applicants for public bounty at Harrisburg. The institution is so well sustained, its equipment so complete, its standards of service are so high, as to give the impression that it is very rich. As a matter of fact, it is dependent on the generosity of its contributors. The recent epidemic of typhoid fever has made unusual demands upon the wards, as many as 120 cases having been under treatment at one time, and the expenses of maintenance have exceeded the receipts by $37,000. Yet the managers do not call upon the legislature for relief. They simply lay the facts before the public, in confidence that their wants will be supplied. The Pennsylvania Hospital remains a monument to old-fashioned, useful philanthropy, of which the City of Brotherly Love has reason to be proud, and which on every account it ought to cherish."

## CHICAGO.

**Mortality During April.**—During April there were 2,628 deaths reported, equivalent to an annual death rate of 16.96 per one thousand. There has not been such a prevalence of the graver diseases since the year following the great fire.

**Hospital Wanted by Women.**—At the meeting of the alumnæ of the Woman's Medical College, it was proposed by Dr. Mary Coons that a hospital for women, to cost $500,000, be erected near Jackson Park. A committee of five was appointed to report on a plan for the enterprise.

**How to Save Diphtheria Patients.**—In its latest bulletin, the Chicago Health Department makes the following statements regarding diphtheria: There are numerous physicians who treat yearly a large number of diphtheria cases, who have not lost a patient from this disease for years. Their inflexible rule is to take a culture at the first visit and to administer antitoxin at once when the diphtheria bacilli are found. For a physician to treat a patient with an acute inflammation of the throat for days without a microscopic examination is little short of criminal neglect. The essentials in the treatment of diphtheria are an early diagnosis and the prompt administration of antitoxin. Physicians who are prepared in these essentials are seldom called on to give a death certificate.

**Mortality Statistics.**—During the week ended May 2, 637 deaths were reported, an annual mortality per one thousand of 17.62. Pneumonia again heads the list with 167 deaths; consumption comes next with 65; violence and heart disease follow, with 39 each. Nervous diseases caused 38 deaths; measles 28, whooping cough 5, scarlet fever 4 and smallpox 2.

**Pneumonia.**—The treatment of this disease is as unsatisfactory as ever, and its increasing ravages make all other acute infectious diseases relatively insignificant. In the bulletin of the Health Department, for the week ended May 2, the Health Commissioner calls attention to the fact that of the total 2,628 deaths last month, 604 were caused by pneumonia, and only 283 by "the great white plague." This is an excess of 113.4 per cent. of pneumonia deaths over consumption deaths, and while the deaths from consumption have increased 30.4 per cent. in actual numbers over those of April, 1902, the deaths from pneumonia have increased 41.1 per cent. this April over last.

**Deaths from Pneumonia Among City Employes.**—The frightful bills of mortality and morbidity from this disease in the county treasurer's and other public officers are too recent to need more than mention. Eight of the 167 pneumonia deaths last week were among the 300 treasury employes, and fully thirty more of them are seriously ill of the same malady. The Commissioner again urges that pneumonia is a highly infectious illness, the cause of which is a microorganism in the sputa of those suffering from the disease, and contracted by inhaling this germ. Therefore, the same care should be taken to collect and destroy the sputa that is taken in pulmonary tuberculosis, or in diphtheria or influenza. The fact that the disease is most prevalent when people are most crowded together, and live or work much of the time in badly ventilated apartments makes obvious the necessity of thorough ventilation of houses, offices, factories, theaters, churches, passenger cars and other public places, in order that the air which must be breathed may be kept as clean and free from infectious matter as possible.

## CANADA.

**Delegate to Berlin.**—Dr. F. B. Kendrick, Toronto, chemical instructor in the provincial university, has been appointed by the Committee of the Society of Chemical Industry, Canadian Branch, a delegate to the International Congress of Applied Chemistry, to be held in Berlin, Germany, at Whitsuntide.

**Toronto University Graduates in California.**—A branch of the Alumni Association of Toronto University was organized in California on March 27 last, when several M.D.'s were present at the first annual dinner. There are nearly sixty graduates and undergraduates of Toronto University in California and a strong effort will be made to get all these into the organization. Contributions will be solicited in that State for the new Convocation Hall of Toronto University.

**Making Doctors by Act of Parliament in Quebec.**—The Quebec legislature is engaged this session as usual in the reprehensible practice of making doctors by act of Parliament. Although it has delegated these powers to the College of Physicians and Surgeons of the province, a body of men which commands and enjoys the respect of the medical profession in the province, it time and again has totally disregarded the rights of the College. In several cases recently it has brought relief to several students who have failed to satisfy the demands of the curriculum of the College of Physicians and Surgeons.

**The Drug Habit in Toronto.**—A Toronto alderman, who is also a physician, has brought to the attention of the City Council the fact that there is at the present time an unusual number of "dope" fiends in that city, a state of affairs which he states demands immediate and earnest consideration at the hands of that body. He has gone to the trouble to make inquiries of druggists and physicians, and finds that there are hundreds if not thousands who have become addicted to the cocaine habit, especially through their constant addiction to a nostrum catarrh cure. It is said that there are business concerns in that city where the whole clerk-body have been demoralized through this so-called catarrh cure, and that the patent medicine alcoholic tippler is not by any means an unknown quantity there. The subject has become of such importance that it is probable that the Medical Health Officer will be instructed to make inquiries and report thereon.

**Analysis of Cases of Gastric Ulcer.**—According to a report published in the April issue of the Montreal Medical Journal, prepared by Dr. F. P. L. Cantlie, Externe in Clinical Medicine in the Royal Victoria Hospital, Montreal, there have been admitted during the past eight years into that institution 85 cases of gastric ulcer out of 20,596, the total number of general cases admitted during the same time. This gives a percentage of only .004. Of these 85 cases, there were three males and 82 females. The ages varied from seventeen to seventy, but nearly two-thirds were in the third decade of life. There were eight surgical cases and all of these but one were admitted after perforation had occurred. Of the eight cases operated on seven recovered, and the ages of these cases varied from twenty to thirty years. The case which died in this series was operated on fifty-eight hours after perforation; the others as far as could be ascertained within twenty hours.

**Obituaries.**—Dr. Samuel Bridgland, M.P.P., died at his home at Bracebridge, Ontario, during the past week of Bright's disease. The late Dr. Bridgland was born in 1847, in Toronto. He studied medicine at Jefferson Medical College, Philadelphia, and was graduated from Queen's University, Kingston, Ontario, in 1870. He immediately commenced practice in Bracebridge, where he continued in a large and lucrative practice up to within six months of his death.

Dr. R. B. Cotton, Regina, N. W. T., died on May 6, aged forty-eight years. Deceased went to Regina from Mount Forest, Ont., in 1882. He was a brother of Dr. J. Milton Cotton, Toronto.

## GENERAL.

**Gift for a London Hospital.**—It was given out in London, England, on May 10 that an unknown benefactor has guaranteed £300,000 ($1,500,000) for the rebuilding and modernizing of St. Bartholomew's Hospital as soon as the plans can be put into practicable shape.

**Examination for Marine Hospital Service.**—A board of officers will be convened to meet at the Bureau of Public Health and Marine Hospital Service, 3 B Street, S. E., Washington, D. C., Monday, June 15, 1903, for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine Hospital Service of the United States. For further information or for invitation to appear before the board of examiners those interested may address Surgeon-General Walter Wyman, Washington, D. C.

**Cerebrospinal Meningitis on Receiving Ships.**—Among the recruits for the navy on the receiving ships Minneapolis and Puritan, lying at the League Island Navy Yard, Philadelphia, cerebrospinal meningitis has made its appearance. Three deaths have been credited to it and a number of the young sailors are now suffering from the disease. The recruits have been provided with tents on shore until the vessels can be thoroughly cleansed and fumigated.

**Medical Department Instruction.**—The Secretary of War has amended the manual of the Medical Department of the Army so as to provide that the course of instruction in that Department shall be under the supervision of the senior medical officer, and that other medical officers and non-commissioned officers shall act as instructors in assigned subjects. All members of the Hospital Corps, except privates, will be instructed one hour daily, except Saturday, Sunday, and legal holidays, in the prescribed subjects, including exercises in drill regulations, hospital corps, particularly with the loaded litter. Privates will be instructed not less than one hour a week.

**Child Labor in Pennsylvania.**—It is a matter of regret that the legislature of Pennsylvania adjourned without taking definite action in the matter of child labor in stores and factories. During the past decade the number of children between ten and fifteen years of age has increased 50 per cent., and is now represented by the astounding figures 1,750,000, as recorded in the year 1900. The illiteracy of children in that State is deplorable and places it lowest among those States having an equal wealth of manufacturing industries. As Judge Gray says: "The flesh and blood of little children is coined into money." A committee of individual citizens has been appointed to enforce existing laws or to agitate for better ones, but little or nothing can be done for two years hence, and meanwhile destruction of soul and body are proceeding hand in hand.

**Insanity Increasing Among the Negro.**—The most sensational feature of the Conference of Charities and Corrections, held last week at Atlanta, Ga., was the statement made by experts that the negro race is in danger of being destroyed by insanity. The discussion was brought about by a paper read by Dr. Searcy, Superintendent of the Alabama Hospital for the Insane, who claimed that his experience showed that insanity was increasing among the negroes at an alarming rate. Lineal deterioration was largely responsible for the tremendous increase of insanity among the negroes, there being thirteen times as many insane negroes now as at the close of the war.

**Migration of Typhoid Fever.**—Everybody has learned to look for an increase in the number of typhoid cases during the fall following close upon the return of the summer boarder to his city home, and it is interesting to note that those attacked belong to the class who are accustomed to spend the entire summer season out of town rather than those of more limited means who can spare at the most only a few days. This is probably due to unhealthful surroundings in many so-called resorts as regards food and drink supply, the non-acclimatized and perhaps debilitated denizen of the city falling an easy prey to the influence of the typhoid germ. So long as there are beautiful drives, fine scenery, good golf links and sumptuous menus the ordinary sojourner bothers very little about the water supply or plumbing of the particular place which takes his fancy; but when danger exists the change back to city life is very apt to produce results from the activity of bacilli that have lain dormant perhaps for some weeks. The health boards in every community should see to it that their guests are properly cared for with a view to prevent any sign of disease.

**Officers of the A. M. A.**—At the New Orleans meeting the House of Delegates was convened in final session at 9 o'clock Friday morning, May 8, and the choice of officers for the ensuing year was the most important business before it. On the third ballot Dr. John H. Musser, of Philadelphia, was elected president. Other prominent candidates for the office were Dr. Lewis S. McMurtry, of Louisville, Ky.; Dr. G. C. Savage, of Nashville, Tenn.; Dr. T. J. Happel of the same State; Dr. H. D. Holton, of Virginia; Dr. J. H. Carstens, of Michigan, and Dr. G. Webster, of Illinois. The Vice-Presidents elected were, first, Dr. G. C. Savage, of Tennessee; second, Dr. Isadore Dyer, of Louisiana; third, Dr. C. Lester Hall, of Missouri, and fourth, Dr. G. F. Jenkins, of Iowa. Drs. Henry P. Newman and George H. Simmons were re-elected Treasurer and Secretary, respectively. Three trustees were elected, as follows: Dr. Wm. H. Welch, of Baltimore; Dr. Miles F. Edwards, of Ft. Wayne, Ind., and Dr. M. L. Harris, of Chicago. The three members of the judicial council whose terms expired were re-elected, to serve another term. Dr. William J. Mayo, of Rochester, Minn., was selected to deliver the oration on surgery at the next meeting; Dr. George Dock, of Ann Arbor, Mich., the oration on Medicine, and Dr. Hermann M. Biggs, of New York, the oration on State Medicine. President Billings announced the appointment of the usual committees and the meeting finally stood adjourned.

JOHN H. MUSSER, M.D.

**Obituary.**—Dr. R. Osgood Mason died at his home in West Fifty-eighth street on Monday last at the age of seventy-three. He was born in Sullivan, N. H., was graduated from Dartmouth College and later from the College of Physicians and Surgeons, this city. Dr. Mason has interested himself for years in various psychological studies and has added much to certain conceptions of mental phenomena, particularly on the spiritualistic side. Among his works are: "Telepathy and the Subliminal Self," and "Hypnotism and Suggestion in Therapeutics." He was a member of the New York Academy of Medicine, and of the Society for Psychological Research.

Dr. Edward de la Granja, for more than forty years a leading physician of Boston, is dead, at the age of seventy-three years. He was born in Avilar, Spain, was graduated from the Central University of Spain, and was a member of the Royal Society of Medicine of that country. In early manhood, as a leader against monarchical institutions, he was banished from the country on three different occasions, and during the Crimean War was a brigade surgeon of the allied forces. He was a member of all the Masonic bodies, and was buried by St. Omer Commandery, Knights Templar.

Dr. Dwight S. Chamberlain, President of the Lyons National Bank, died at Lyons, N. Y., yesterday, aged sixty-five years, of typhoid pneumonia. He served as Surgeon in the Ninth Heavy Artillery during the Civil War, and later was in charge of the Soldiers' Hospital at Syracuse. He was a member of the Loyal Legion, and was prominent in Republican politics.

## CORRESPONDENCE.

### PREDISPOSITION.

*To the Editor of the* MEDICAL NEWS:

DEAR SIR: Will you kindly allow me to present the following proposition through your columns? Without expressing a personal opinion, I would like to collate those of clinicians, sanitarians and pathologists and would suggest that, to insure their receipt, they be sent to me in the form of private correspondence or references to literature.

"Of all diseases due to parasites, of whatever kind, tuberculosis alone clearly illustrates predisposition by general states of the organism of the host, independently of opportunities for infection and of plainly local lesions or cellular states (as in regard to the malignant neoplasms, if these be considered parasitic) which favor colonization of the parasite. Even in the case of tuberculosis, these latter factors outweigh surely general conditions of diminution of resistance."

Very truly yours,
A. L. BENEDICT.

Buffalo, May 11, 1903.

# SOCIETY PROCEEDINGS.

## CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

*Held at Washington, D. C., May 12 to 14, 1903.*

### GENERAL SESSION—MAY 12TH.

The President of the Congress, W. W. KEEN, M.D., of Philadelphia, in the Chair.

Dr. Keen announced as the subject for discussion "The Pancreas and Pancreatic Diseases," and introduced the reader of the first paper, Dr. E. L. Opie, of Baltimore, whose communication was on the "Anatomy and Physiology of the Pancreas."

**Aberrant Pancreas.**—Dr. Opie said that aberrant forms evidently associated with the pancreas occur in various regions not far distant from this gland itself. They have been found as distant as the stomach, not infrequently in the duodenum, and sometimes even in the jejunum. Dr. Opie has collected reports of such appearances ten times in 2,200 autopsies. The explanation of the anomaly is not easy. Some have considered that there are multiple embryonic foci of pancreatic development. This does not seem a satisfactory explanation, however, for it would be surprising to find so important an organ developing from different centers. Dr. Opie considers that the real explanation of the anomaly is that during the course of development portions of the pancreatic tissue become entangled in the evoluting intestine and during the process of elongation are carried more or less distantly. Hence the pancreatic islands in the gastric submucosa, in the papilla of Santorini and in the bile papilla or in the submucous tissues of the jejunum.

**Microscopic Anatomy of the Pancreas.**—Dr. Opie said that the microscopic anatomy of the pancreas is far more important than its macroscopic anomalies. The most interesting feature of its histology is due to the discovery by Langerhans, of Berlin, of islands or groups of cells round or oval in form and composed of polygonal elements. These cells are not dissimilar to the other cells of the pancreas originally, but they have no connection with the ducts of the pancreatic gland. It is evident then that they have no function as regards the intestinal secretion of the pancreas. In the midst of them is found a very complete network of capillary blood-vessels. This arrangement reminds one of the glomerulus of the kidney, but, unlike the glomerulus, the vessels composing the vascular tufts of the pancreas have very free anastomoses with each other. At first it was thought that these appearances were characteristic only of the pancreas of man. It has been found to exist, however, in all the higher vertebrates and even in most reptiles and fishes, and it is evident that it is only a question of time until most evoluted animals will prove to have these structures.

**Development of Islands.**—There is an evident special purpose in this peculiar arrangement of these interasinous cells of the pancreas. Dr. Opie has found in syphilitic children that the columns of cells which should have formed under normal circumstances the islands of Langerhans, were still connected with the ordinary secreting cells of the pancreas. This shows a delay in development, for ordinarily there is no trace of connection between the two sets of cells. The rich vascular supply of the islands of Langerhans reminds one very much of the similar arrangement of blood-vessels in the adrenal glands or in the parathyroid structures. It is evident that the islands represent a so-called ductless gland. The action of the substance which they secrete is exerted through the blood. Recent observations have made it clear that its purpose is to help carbohydrate metabolism. In certain cases of diabetes degenerative changes in the islands of Langerhans have been found. The discovery of the connection between these portions of the pancreas and diabetes makes clear, too, why, in some cases of diabetes, no changes of the pancreas were apparent, since it is possible to have what looks to the naked eye as a normal pancreas, yet containing distinct changes in the islands of Langerhans.

**Anatomical Relations of Bile Duct and Pancreatic Duct.**—Though there is often an accessory pancreatic duct, usually the bile ducts and pancreatic ducts empty into the intestines through the same papilla. The blocking of the common bile duct then by a biliary calculus if it occurs low down in the duct will also cause blocking of the pancreatic duct. Sometimes this gives rise to a directly open passage between the liver and the pancreas through which bile may flow and cause serious damage to the pancreatic structure. This anatomical relationship is now known to be of extreme importance for certain diseases of the pancreas. Bile flowing over the pancreas may set up acute pancreatitis with all the symptoms peculiar to that condition.

**Complexity of Function.**—Dr. R. H. Chittenden, of New Haven, Conn., in beginning his paper on "The Physiology and Physiological Chemistry of the Pancreas," said that formerly it was the custom to think that each organ subserved but one function. It is now known, however, that complexity of function is the rule rather than the exception in nature, and the pancreas for instance has not only a fat-splitting ferment, a ferment for the digestion of carbohydrates, a proteid ferment, but has also an internal secretion more important than any of its intestinal digestive functions. A fistula of the pancreas produced by introducing a canula into the duct does not set up any disturbance of the general nutrition of the animal experimented upon. Complete removal of the pancreas, however, causes first serious nutritional disturbance by interference with carbohydrate metabolism and then, soon afterward, death, because of severe diabetes. The pancreas is not merely a salivary gland out of place, as a distinguished physiologist once said, but it is one of the most important organs in the abdominal cavity.

**Chemistry of the Pancreas.**—One of the most important discoveries with regard to the pancreas made in recent years was the effect upon it of adrenalin. First, there came the observation that the use of extract of the adrenal gland might produce diabetes, then Herter's observation that this was probably due to an oxydizing effect of the adrenal extract upon the pancreatic cells. There is no doubt now that the pancreas is the most important organ as regards sugar metabolism. The liver, the kidneys and the nervous system may each have important influence, but when they are affected, Nature seems to be able to get along without any of them as far as the sugar metabolism of the system is concerned, but when the pancreas is seriously affected, then diabetes is inevitable. A very interesting discovery made recently is that substances are produced during stomach and intestinal digestion which, on absorption, are carried to the pancreas and excited its secretion. This renders still more complex the problem of pancreatic function. It has been thought that the pancreas provides glycolytic enzymes. These are, however, produced in many tissues, though the pancreas may be the most important source of them. There are physiologists who consider that the pancreas acts upon the liver thus influencing the production of sugar and so producing the well-known effect with regard to diabetes. Medical knowledge on this subject, however, is as yet very vague.

**Curious Chemical Effects.**—How complex is the problem of digestion in general may be gathered from the fact that in certain experiments animals fed upon dextrose were poisoned by oxalic acid, a by-product of the changes of dextrose within the system. Ordinarily dextrose undergoes no such deleterious changes in the system, but when there is a deficiency of calcium salts present in the tissues the production of toxic oxalic acid becomes possible. Recently it has been shown that pentose exists in the pancreas. Salkowski's observations as to the occurrence of pentosuria may help to throw some light on diseases of the pancreas by indicating another diagnostic factor in the urine. The disseminated fat necrosis which follows acute pancreatic disease and which may affect even the yellow marrow of the bones is due to the fat-splitting ferment in the pancreas. When calcium salts are present, lime soaps may be produced by characteristic reaction.

**Influence of Diet.**—Pawlow has shown that on the diet of the individual depends to no small degree the amount and character of the digestive ferment secreted. On an almost exclusive bread diet, the amylotic ferment is especially strong, with an abundance of fat, the fat-splitting ferment, and the same holds good for the proteid ferment. These investigations will undoubtedly be of service in the treatment of functional disturbances of the pancreas and in the diagnosis of organic trouble.

**Pathology of the Pancreas.**—Dr. Simon Flexner, of Philadelphia, Pa., said that the division of pancreatic diseases suggested by Fitz in his original monograph is the best yet presented. The three forms of acute pancreatitis are the hemorrhagic, the suppurative and the gangrenous. Fat necrosis occurs with the hemorrhagic and gangrenous forms but not the suppurative. The etiology of acute pancreatitis is now much clearer than before. It has been shown that if substances be thrown into the pancreatic duct, as for instance chloride of zinc or acids, or formalin or bacterial products, hemorrhagic pancreatitis results. Natural and artificial gastric juice, as has been shown by Flexner himself, produce the same result. The interesting feature is the great rapidity with which pathological changes occur. One hour after the injection leucocytes can be seen wandering from the blood-vessels, and in two or three hours hyaline necrosis has taken place.

**Influence on Bile.**—In a case under the observation of Halsted and Opie, a stone in the ampulla of Vater blocked the common bile duct and really made the ducts of the liver and the pancreas a continuous channel. Opie was able to trace the staining by the bile up into the ducts of the pancreas and to show that certain inflammatory changes which had taken place in the pancreas were due to the irritative effect of the bile. Experiments upon dogs confirm this conclusion and showed the possibility of producing acute pancreatitis by this method. Gangrenous pancreatitis is really secondary to hemorrhagic pancreatitis. The lower resistive vitality of the tissues permits of the growth of micro-organisms which cause gangrene.

**Symptomatology of the Pancreas.**—Dr. Reginald Fitz, of Boston, said that extensive morbid changes may take place in the pancreas and discovered in the autopsy without there being any notable disturbance of health. There are certain symptoms, however, of pancreatic disease that may help in the recognition of affections of the pancreas. The most frequent of these are fecal fat and the occurrence of undigested muscle fibers in the stools. Fecal fat, it has been said, occurs only when there is liver disturbance associated with pancreatic disease. In 29 cases in which this relationship was studied, jaundice was present in only 12, and diabetes in only 11, in which fecal fat was found. Very seldom were jaundice and diabetes present at the same time. In pancreatic disease, there is an increase especially of the neutral fat. It is important to remember, however, that there are often two ducts of the pancreas and that when the duct of Wirsung is closed by a calculus the duct of Santorini may be opened or there may be an accessory pancreas. Undigested muscle fibers were found in eight cases, in six of which there was also sugar in the urine and in five easily visible fecal fat, though in only two was jaundice present. It seems clear that these symptoms will be of service in the recognition of pancreatic disease. Herter tested the power to digest fat in a case of cancer of the pancreas by putting the patient on an exclusively milk diet when an excess of fat was found in the stools.

**Tests for Pancreatic Digestion.**—Sahli suggested that capsules hardened in formaldehyde would resist stomach digestion for at least twelve hours, yet be at once acted upon by the pancreas. They were found unacted upon twenty-four hours after ingestion in a case of cancer of the pancreatic duct. If the giving of pancreatic extract improves digestion, there is then indirect evidence of the existence of pancreatic disease. Indican does not bear any necessary relation to pancreatic disease, but an increase of the ethereal sulphates in the urine does bear an important relation according to Herter and Edsall. For acute pancreatitis the important symptoms are those of acute peritonitis beginning in the upper part of the abdomen.

**Injuries of Pancreas.**—Dr. von Mikulicz-Radecki, of Breslau, Germany, said that each surgeon sees but few cases of pancreatic disease, yet in twelve years he has had the opportunity to observe some 60 cases. The surgeon cannot rely upon functional disturbances of digestion for the diagnosis of pancreatic disease. The danger with which operations upon the pancreas are associated has limited surgical interference with this organ, as also the fact that the patient is often so low in health that he is not able to stand the severe and prolonged operation necessary. Another difficulty of pancreatic surgery is that of controlling hemorrhage. In spite of ligation en masse, blood and secretion escape into the peritoneal cavity and seriously affect the peritoneum. In 91 resections of the stomach done by Mikulicz 25 died. In 30, however, in which there was injury of the pancreas during the breaking up of adhesions, 21 died in most instances from secondary peritonitis.

**Tampons and Drainage.**—In injuries of the pancreas, drainage is the most important part of the treatment. Of eight cases drained six recovered. Of four undrained, three died. Of 80 cases collected from literature 27 drained gave only 11 deaths, 53 treated without drainage gave 41 deaths. With regard to the treatment of injuries and inflammatory processes of the pancreas, the indications for the surgeon are first to stop hemorrhage and secretion by deep sutures and ligatures en masse and then to use drainage very freely. Operation is not so discouraging as might appear. In 22 gunshot wounds seven were operated upon and only three died. In nine stab wounds eight were subjected to operation and one died. All those not operated upon died. The surgeon must not wait until it is too late. Exploratory laparotomy should be done on suspicion and may be accomplished very readily by local anesthesia, even on a collapsed patient.

**Tumors and Cysts of the Pancreas.**—Dr. Roswell Park, of Buffalo, said that there are big books on diagnosis of pancreatic disease, yet the diagnosis is still extremely difficult. Of cysts the most common are retention cysts, though the closure of the pancreatic duct does not necessarily lead to cyst formation. So-called proliferative cysts of the pancreas are cystic cavities that occur in their walls. Hydatid cysts of the pancreas are very rare. Pseudo-pancreatic cysts consisting of fluids in the lesser omental cavity or in bursæ of the peritoneum, are quite common. They are usually spoken of as pancreatic and they are associated with the pancreas in causation. Some form very rapidly and thus reveal their character, for the slower the cyst formation, the more surely is it a true pancreatic cyst. Traumatic cysts are much more frequent in men than in women because of the greater liability to trauma.

**Fistulæ of the Pancreas.**—Fistulæ of the pancreas are very difficult to deal with. Several have been reported that lasted more than two years. One of them on careful observation showed a great increase of secretion whenever the patient, a young woman, was subjected to emotional strains. Not much can be done actively to cause closure of a fistula, since there is danger of pancreatic secretion causing peritonitis. The diagnosis of pancreatic cysts still remains very difficult. Hydronephrosis and adrenal cysts are the most common sources of error, but ovarian cysts, as in a recent case seen by Dr. Park, may simulate the pancreatic tumor. Cysts of the stomach walls have also been described in this connection. Aspiration is not to be commended even for diagnostic purposes. As Robson says, it is a relic of medievalism. Postoperative drainage will often save life. Drainage should be made from the back, and for this purpose the patient's back should be scrubbed well before operation, so as to have no difficulty or delay during the operation.

**Uncertainty in Matters Pancreatic.**—In opening the discussion, Dr. Chas. G. Stockton, of Buffalo, said that in spite of all the work that had been done on the pancreas in recent years there was still much uncertainty as to diagnosis. Even with regard to diabetes the connection of the pancreas was as yet not clear. Some cases of severe diabetes had perished from the disease without presenting any noticeable lesions of the pancreas. It seems to be proven from recent cases that the pancreas is intimately associated with polyuria and that this often precedes pancreatic diabetes. At first 60 to 90 ounces of urine are passed, then some glycosuria makes its appearance, finally true diabetes sets in. This sequence of events follows operation on the pancreas not infrequently.

**Pancreatic Inflammations Anomalous.**—Dr. Stockton is of the opinion that there is scarcely justification for the term inflammation when applied to chronic pancreatic affections. The pancreas undergoes induration not unlike cirrhosis of the liver. As to gangrenous pancreatitis it is too much to assume that it is of putrefactive microbic origin since not infrequently gangrenous patches examined bacteriologically have proved sterile. Hemorrhagic pancreatitis does not follow any general change of arteries, though this is sometimes asserted. Apoplexy of the pancreas, so-called, is unlike apoplexy of the brain, in this respect at least. Nor is the hemorrhage due to a diathesis, for it occurs too commonly. It is probably of infectious origin when non-traumatic though our knowledge is practically all theoretic.

**Chances for Successful Pancreas Operations.**—Dr. Maurice H. Richardson, of Boston, said that opportunities for successful operative work upon the pancreas present themselves rather rarely. In between 6,000 and 7,000 abdomens opened at the Massachusetts General Hospital in but five or six cases was the pancreas operable. Six cases of acute pancreatitis have been operated upon at the hospital but all have died. Abscesses of the pancreas are much more favorable in their prognosis. Four of these conditions have been operated upon successfully. In general, Dr. Richardson is reluctant to operate upon pancreatic conditions, especially in the flabby stout middle-aged person in whom acute pancreatic conditions are prone to develop. Advantage should be taken of all abdominal operations to determine as far as possible the condition of the pancreas. This is especially true for operations upon the gall-passages. Much practical knowledge of the pancreas may thus be obtained.

**American Contributions to Knowledge of Pancreas.**—Dr. B. S. A. Moynihan, of Leeds, England, said that until recently pancreatic surgery was considered only as an appendix to gall-stone surgery. Opie had undoubtedly thrown great light on affections of the pancreas by pointing out their direct connection with biliary causation, especially as regards chronic inflammatory processes. Dr. Moynihan has operated upon 15 cases of chronic pancreatitis without any deaths. In one case the succession of events after operation was as follows: There was polyuria amounting to 80 and later 100 ounces in the twenty-four hours. Then, after some months glycosuria followed. The patient is now on the high road to death with severe diabetes. In one case, the first on record, Dr. Moynihan diagnosed a pancreatic calculus and removed it. In a very recent case Mayo-Robson has performed the same operation. In certain cases under Dr. Moynihan's observation there have been large sloughs, so-called gangrenous patches, yet the material has proved absolutely sterile to the most careful bacteriological examination.

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## ASSOCIATION OF AMERICAN PHYSICIANS.

*Eighteenth Annual Meeting, held at Washington, D. C., May 12 to 14, 1903.*

### First Day—May 12th.

The session was opened by the annual address of the President of the Association, Dr. James Stewart, of Montreal, who chronicled the deaths of three young but very promising members of the Association, Dr. Wyatt Johnson, of Montreal, Dr. Frederick A. Packard, of Philadelphia, and Dr. Walter Reed, of the United States Army. All three of them were original workers of high order of merit and to Dr. Walter Reed is due perhaps the greatest service conferred upon mankind in this generation—the discovery that yellow fever is spread by the mosquito.

**Bathycardia.**—Dr. E. G. Janeway, of New York city, described two cases seen, one at autopsy, the other in the dissection room, in which the position of the heart was very low in the body. This was apparently a congenital condition, not acquired and so the name bathycardia seems more suitable for it than cardioptosis. The lungs and heart were normal and the heart was not mobile. The difficulty in these cases during life would be the danger of thinking that some enlargement of the heart existed or some pathological condition of the lungs. Doubtless in such cases interference with the heart's action because of gaseous distention of the stomach would be more serious than under normal conditions.

Dr. Wm. Osler, of Baltimore, said that in certain cases of very large hypertrophy of the right ventricle, due to severe mitral stenosis there is a distinct bulging below the ribs to the left of the sternum. This pulsates and is taken for aneurism of the heart, even of the descending aorta at times, and might be confused with a low position of the heart.

**Posttyphoid Fever.**—Dr. Francis Delafield, of New York, described a series of fevers occurring after typhoid fever but due to a different pathological process. Such fevers may be due to cystitis, phlebitis, arthritis, and other inflammatory conditions at times caused by the typhoid bacillus, yet not real typhoid. The most frequent type is a short fever of a few hours' duration, occurring for days, due probably to weakness and not of much clinical importance. In certain subjects, however, fever even as high as 103 to 104° F. may recur day after day, yet without any relation to a common typhoid curve. For these cases, as pointed out by Dr. J. C. Da Costa, of Philadelphia, several years ago it is important that low diet and confinement to bed should not be continued indefinitely. Patients must be fed liberally, their diet including meat, and they must be made to get up. It requires no little courage to do this with the fever at 103° F. every afternoon, yet it is the only way. Often these cases present all the manifestations of sepsis. They have not the typhoid look, there is no delirium and there is real appetite. The septic temperature is not controlled by baths, as is the typhoid, and there is a rapid loss of weight and strength if they are kept on liquid diet.

In the discussion, Dr. H. Koplik, of New York, said that such recrudescences of fever, not true relapses, are common in children and the patients become very much emaciated. It is a great mistake to keep them on a low diet. The fever is really an inanition fever or is due to secondary infection.

**Secondary Typhoid Manifestations.**—Dr. George L. Peabody, of New York, said that physicians will not recognize the true significance of these posttyphoid fevers until cultures of the blood are more commonly made than at present. In a recent case under his observation all the symptoms pointed to a septic condition. There were femoral thromboses on both sides. The fever was typically septic in course, yet the only organism found in the blood was the *Bacillus typhosus*. These secondary typhoid manifestations do not contraindicate the use of solid food. A definite rule as to the times of allowing solid food after typhoid is hard to formulate, but it cannot be determined entirely by the temperature chart, or patients will sometimes be subjected to actual starvation. He believes as soon as there is real appetite for food a hard-boiled egg should be given. This should be so hard boiled that it readily crumbles to powder. After this meat may be allowed, after that farinaceous foods.

Dr Beverly Robinson, of New York, said that some of the posttyphoid fevers are due to the absorption of toxic material from the digestive tract. Physicians are too fearful of using mild purgatives, as if there were danger of producing perforation of the intestine during convalescence.

**Artificial Immunity in Experimental Tuberculosis.**—Dr. E. L. Trudeau, of Saranac Lake, N. Y., detailed some experiments on rabbits for the production of immunity. Tuberculous toxins do produce some immunity to their own action but this does not last, nor does it protect against future invasions of the disease by living tubercle bacilli. If even such susceptible animals as rabbits, however, are inoculated first with attenuated cultures until there is no reaction to tuberculin and then with virulent cultures of tubercle bacilli a state was induced in which the animal acquired a resisting power against tuberculosis. Though the disease developed after the inoculation the animal tissues were able after a time to bring about a resolution of the lesions and true cure followed. Where actual cure did not take place a prolongation of life, at least three times that of control animals was obtained. Dr. Trudeau showed the specimens of lungs of rabbits, exhibiting the marked tendency to complete resolution in experimentally immunized animals. He concludes therefore that the evidence tends to show that the attainment of a certain degree of toxin immunity does not protect against reinfection, and that whatever degree of immunity has been obtained experimentally is due rather to a bacteriolytic, or what Behring refers to, as isopathic immunity. A living germ seems necessary to the production of whatever degree of immunity has already been attained experimentally.

**Bovine Tuberculosis of Human Beings.**—Dr. Theobold Smith, of Boston, described two cases of mesenteric gland tuberculosis that had come under his observation. One of these proved by bacteriological tests to be from bovine bacilli, the other from the bacilli of human tuberculosis. In these cases the infection was evidently from the intestinal tract, and the one positive case shows the liability to human infection by bovine tubercle bacilli. A cow was inoculated with cultures from the two cases. The bovine bacillus grew well in the animal's tissues. The human bacillus failed to grow. There was some slowness of growth on the part of the bovine bacillus evidently due to attenuation of virulence in human tissues. Two almost similar cases of mesenteric tuberculosis proved to give cultures of bacilli of the human type, so that out of four cases only one seemed due to infection from tuberculous meat or milk. In response to Dr. Osler's question, Dr. Smith said that there was no macroscopic difference between the lesions due to the bovine and the human bacilli. In the caseating glands in which the bovine bacilli were found there were large numbers of bacilli while very few in those due to a human infection. Dr. Ravenel, of Philadelphia, has reported a case of human mesenteric gland infection also due to bovine bacilli.

**Transmission of Bovine Tuberculosis by Milk.**—Dr. George M. Kober, of Washington, D. C., said that Koch's declaration that there was so little danger of human infection from tuberculous milk that it could be neglected was undoubtedly rash and not confirmed by observations. Dr. Kober has collected 86 cases from literature in which, after careful analysis, there seems no doubt that human intestinal infection took place from tuberculous milk. Now that more special attention is being concentrated on this point more and more cases are being reported. Country practitioners are more favorably located than those of the city for the satisfactory observation of these cases and tracing them to tuberculous animals. There seems good reason to think that the lymphatic forms of tuberculosis in human beings especially the so-called scrofula of children are more frequently due to bovine tubercle bacilli than to those of human types. Investigations should be conducted especially along these lines.

**Protection by Foreign Tubercle Bacilli.**—Dr. Trudeau said that undoubtedly rabbits could be protected and distinct immunity to other forms of tubercle bacilli produced in them by injections of avian tubercle bacilli. On the other hand, cows, it has been shown, can be protected against bovine tuberculosis by injections of human bacilli. This would seem to demonstrate the essential identity of the various types of tubercle bacilli.

Dr. Theobold Smith said that it is very doubtful if the identity of classes of bacilli can be argued from reciprocal immunizing powers. This suggests very close biological relationship but no necessary identity, as we know from study of the colon bacilli and related groups and the so-called agglutinating power.

**Tuberculosis of the Tonsils.**—Dr. Henry Koplik, of New York, said the tonsils, as the seat of tuberculosis, are frequent in the literature. The cases divide themselves first into those observed clinically, and those in which post-mortem examinations have been made. The primary isolated tuberculosis of the tonsil is rare, the secondary forms, especially occurring with pulmonary phthisis, are quite a common form of the disease. The cervical lymph nodes enlarge in tonsillar tuberculosis of both varieties. Isolated forms of tuberculosis of the lymph nodes are especially common and interesting as occurring in children. The secondary enlargement of these nodes is only of interest as complicating tuberculosis elsewhere. Children furnish the largest quota of cases of tuberculosis of the tonsils, the cause of this is to be found in the evident greater activity and growth of lymph tissue in these subjects. The tonsils are the portals of infection, and play a rôle as carriers of infection throughout the economy. It was at first thought that these nodes were infected from below through the bronchial nodes, this was unnecessary but may exceptionally occur. As a rule the tubercular bacillus enters the tonsils and infects the nodes from above. The cases of Friedman illustrate this. Tuberculous peritonitis often begins in tonsillar tuberculosis with tuberculosis of the lymph nodes. The manner of infection is by the ingestion of infected food or sputum for the most part. The so-called Fütterungs-tuberculosis of the Germans is much more common than has been thought, as cases cited by Dr. Koplik show very distinctly. A clear case of generalized tuberculosis is especially demonstrative of this.

**A Skin Lesion of Rapid Growth.**—Dr. W. P. Northrup, of New York city, exhibited photographs of a case in which there were a series of lineal albicantes similar to those which occur in pregnant women, just above the knee of a young man who after an attack of typhoid fever grew very rapidly. The scars, at first pinkish but now ivory white, are due to cracks of the corium during the process of rapid growth.

Dr. Abraham Jacobi, of New York, said that such cracks followed by scars occur in connection with other fevers and without any necessary connection with growth. He has seen them not infrequently after scarlet fever.

Dr. William Osler, of Baltimore, said that he had observed such scars after typhoid fever in adults. A friend who suffered from typhoid fever after thirty years presents a very curious series of such lesions on the back. They evidently bear no relation to growth and the splits of the corium evidently occur as the results of lowered nutrition of the parts.

Dr. Janeway, of New York, called attention to the fact that such lineal albicantes are not infrequent in stout men, especially if they lose somewhat in weight as they grow older. They occur not only on the abdomen, where they may be quite as prominent as on any pregnant woman, but especially in the axillary regions and below the groins.

**Dermatomyositis.**—Dr. F. Forchheimer, of Cincinnati, reported a case of this rare disease, of which there are only some 16 examples altogether in the literature. The affection was characterized in this case by pustular invasion of certain regions followed by tenderness, swelling and edematous infiltration of muscles. It developed in a woman who had been suffering from a severe emotional strain and who was intensely nervous. A prominent feature of the disease was great anorexia. The patient was forced to take about 3,000 c.c. of liquid diet, yet passed only 2,000 c.c. of urine per day. As a sequel of the disease there is a pigmentation that has thus far persisted in spite of treatment. The etiology of the disease is mainly to be found in the woman's nervous condition. The usually accepted explanation of the origin of the disease is that it is an angioneurotic edema with neurotic complications.

**Tenement Infant Feeding.**—Dr. L. Emmet Holt, of New York, detailed some observations made upon infants in the tenements of New York City with Dr. Wm. H. Park and the New York Board of Health. These infants, 600 in number, were fed in various ways, many of them on grocery milk. In the winter time these got on very well, but in the summer they were liable to many infectious diseases, especially of intestinal location. This milk, however, was practically always boiled before using, there being very few families in which some form of sterilization was not practised. This shows that publicity has accomplished much for the care of the child. As better milk was used the death rate grew less, though many children still suffered from diarrheal affections. The best results were obtained with the milk of distributing stations which assured proper cleansing of bottles and thorough sterilization. Of course, such infants were also kept under observation by the fact of coming for milk.

**Care of the Poor for Children.**—In spite of poor circumstances many of the children were kept from serious illness by the devotion of parents. It is surprising how few children in the tenement-house districts are bottle-fed, in comparison with those nursed. Not more than five per cent. are entirely fed artificially. This is very different from the impression obtained from dispensary services to which so many bottle-fed infants apply. Very little artificial baby food is employed. Condensed milk is quite commonly used and gives immediate good results; that is the preparation is sterile to begin with, and so causes no digestive disturbance and gives little tendency to diarrhea. Children fed on condensed milk, however, while apparently healthy are prone to exhibit little resistive vitality. They are sure to catch all the diseases that are going, and they readily fall victims even to the milder infections. In general, however, the inspection of the feeding of the children of the poor is encouraging, since it shows how ready they are to accept directions and fulfil them, though they involve no little trouble and expenditure of time and money.

### SECOND DAY—MAY 13TH.

**Acute Lymphatic Leucemia.**—Dr. A. O. J. Kelly, of Philadelphia, reported four cases of acute lymphatic leucemia, a hitherto supposedly rare disease, with the necropsy findings of all the cases. The first patient was forty-nine years of age and was under observation for two months. Symptoms of the disease were present for ten weeks. They began with sore throat and some uncomfortable enlargement of the liver, followed by that of the spleen. There was fever, about 100° F., and at first the blood count showed 17,000, then 25,000 and later 105,000 leucocytes. Among these the lymphocytes were in the vast majority with 97 per cent. of the whole number. Death took place in the eighth week in the hospital. At necropsy the spleen was found enlarged, all the lymph glands, especially the retroperitoneal glands and the bone-marrow, had become entirely lymphoid in character. The second case began quite as insidiously, gave the same clinical picture with fever and gradual weakness and died in four and one-half weeks.

**Simulation of Sepsis.**—The third case began to develop about eighteen days after the termination of the fourth pregnancy and at first the condition was considered to be due to puerperal sepsis developing late. The examination of the blood made the distinction evident. There were 208,000 leucocytes and later 460,000, finally 570,000, with 97 per cent. of the whole number lymphocytes. In the earlier stages with the first rise in the leucocytes the differential count would give the only distinctive sign that the condition was not septic. All the body glands were found red or splenified and the bone-marrow was lymphoid. The fourth case was somewhat anomalous. Besides the enlargement of liver and spleen and all the lymph nodes, there was a gumma of the liver. Whether this syphilitic process had anything to do with the pathological condition of the blood and blood-making organs that subsequently developed is not clear.

**Origin of Lymphocytes.**—The interesting question for the distinction of the two types of leucemia is as to the origin of the mononuclear cells. Ehrlich insists that the lymphocytes originate in the spleen and the lymph glands, while the myelocytes have their origin in the bone-marrow. There are good authorities who insist, however, that the lymphocytes and myelocytes have a common parent in certain marrow cells. Recently intermediate types of leucemia have been described in which both forms of cells were increased in the blood, the lymphocytes most. In some of the reported cases the lymph glands have not been enlarged at all, though the marrow has become distinctly lymphoid. Dr. Kelly is of the opinion that the lymph cells are not merely passive, influenced by chemotaxis, but that they display at least in lymphatic conditions an ameboid movement. This Ehrlich does not admit.

**Acute Lymphatic Leucemia and Typhoid Fever.**—There are undoubtedly a number of cases of acute lymphatic leucemia masquerading in this country as typhoid fever, going on to fatal termination absolutely unsuspected. The disease begins with fever and weakness and not infrequently there are hemorrhages from mucous membranes, especially the nose. There is enlargement of the spleen, anorexia progressive weakness, and fatal termination in from five to eight weeks. The febrile course is not that characteristic of typhoid, but there is continued fever with exacerbations and the case is set down as anomalous typhoid fever. The blood affection may also or has been hinted in the description of one of the cases simulate acute septicemia and has undoubtedly been mistaken for that disease. The necessity for blood examinations and especially for differential counts of the white cells is very evident.

**Fatal Acute Splenic Leucemia.**—Dr. Kinnicutt, of New York, described a case of acute lymphatic leucemia. The first noteworthy symptoms were rather frequent nose-bleed, with persistent and apparently causeless vomiting, enlargement of all palpable lymph glands from the size of peas to that of cherries or plums, the larger glands being distinctly tender. The glands on the postpharyngeal wall were also enlarged and the liver and spleen both distinctly palpable below the margins of the ribs. There was an irregular temperature varying from 98° to 103° F. There was some bleeding from the gums and constantly increasing weakness with absolute anosexia. Death took place after sixteen days of observation and after considerable decrease in size of the spleen had occurred. During the last few days of the disease the edge of the spleen had ascended at least 1½ inches under careful observation.

**General Enlargement of Glands.**—Besides the external lymph glands all the internal lymphatic structures were enlarged. The thymus gland was much hypertrophied and was surrounded by overgrown lymphatic nodules, some of which were adherent to the sternum. There was enormous hyperplasia of the lymphatic tissues of the intestine. The solitary follicles and Peyer's patches were greatly hypertrophied. The appendix, which now for some time has been known to be particularly rich in lymphoid tissue, was increased in size three or four times its normal diameter. There were no nucleated red blood cells though the anemia had reduced the number of red cells below one million. The white cells rose in number to above one-half million and there was frequent oozing of blood through mucous and serous surfaces. Eighty ounces of turbid fluid were found in the peritoneum.

**Terminal Increase of Myelocytes.**—Toward the end of the case there was a constant increase of myelocytes. This accords not at all with Ehrlich's declaration with regard to the origin of lymphocytes and myelocytes from different sources and the consequent improbability that both kinds of cells should be increased in the same disease. These mixed forms of leucemia have been reported more and more frequently of late years, however. While one week before the fatal termination of the disease the myelocytes represented less than five per cent. of the leucocytes they rose in number until there were 12 per cent. and then finally, just before the end, to over 15 per cent. of the white cells present. This was the case notwithstanding the fact that in the post-mortem examination of the bone-marrow the proportion of myelocytes was found to be only about three per cent. of the cells of that structure.

**Clinical Splenic Anemia.**—Dr. George Dock, of Ann Arbor, Mich., described two cases of splenic anemia with early and late stages of cirrhosis, that is to say, early and late stages of Banti's disease. The first patient was a healthy looking though rather spare built man, whom Dr. Dock had known and considered in good health for four years. He noticed some discomfort in his left side and found he could feel the lower border of his spleen below the margin of the ribs. He did not mind this, however, and sometime later applied for life insurance. The fact that his abdomen was enlarged was noticed and mentioned in the doctor's report but the risk was accepted. The discomfort of his enlarged spleen became so great that he applied for treatment. Dr. Dock advised removal of the spleen, which Dr. Nancrede performed. The spleen was adherent, however, and many vessels were found as large as the thumb. The patient died not long after the operation.

**Long Prolonged Ascites.**—The second case was that of a woman of thirty-five years, who had never been pregnant. Six years before she came under observation she suffered from recurrent attacks of dysentery with bloody stools. From the first attack there had been some ascites. Dr. Dock doubted this statement but was assured of its certainty by the family physician who had the case under observation all the time. The spleen was found to be three fingers' breadth below the ribs. The liver was not palpable and was on percussion evidently contracted. The diagnosis cirrhosis of the liver was made. Later, because of the discomfort in the abdomen complained of, a gynecological examination was made and a hard enlarged uterus found. This was operated upon in the hope to relieve her symptoms. A calcified fibroid tumor of the uterus was found and removed. No other pathological condition of the abdomen was found. She recovered from the operation but died from a severe gastric hemorrhage not long after.

**Pathological Lesions.**—Dr. A. S. Warthin, of Ann Arbor, reported the pathological anatomical details of Dr. Dock's cases, insisting especially on the contraction of the portal vein and the calcic degeneration of its wall in both cases. There were many other points of pathological similarity, however. Both cases presented a typical picture of splenic anemia, viz., splenic fibrosis, etc. The most interesting feature of the two cases was an extensive new formation of lymphoid tissue throughout the root of the mesentery and the prevertebral adipose tissue. In the one case (early stage of cirrhosis) the new lymphoid tissue resembled splenic pulp in structure, the larger nodes having the character of accessory spleens. In the second case (advanced cirrhosis) the lymphoid tissue presented the characteristics of hyperplastic hemolymph nodes. All of these showed in their blood-sinuses the presence of great numbers of phagocytes containing disintegrating red cells and blood-pigment, the degree of hemolysis apparently being much greater than that occurring in pernicious anemia. No hemosiderin, however, was found in liver, spleen or kidneys. No evidences of red blood-cells destruction could be discovered in the spleen. On the other hand, the bone-marrow showed great numbers of red-cell and pigment phagocytes, as in the hemolymph nodes. Similar changes were found in the hemolymph nodes of the case showing early stage of cirrhosis, but were much less marked; in this case some evidences of hemolysis in the spleen were also found.

**Hemolymph Nodes Abundant.**—There were some 450 hemolymph nodes in the fat tissue just in front of the vertebral column. These on section looked like little spleens and it was evident that the change in them had taken place as compensatory for the disturbed splenic function. Besides this there was a remarkable tendency to deposit lime salts throughout portal system, fibrosis of all the portal branches, interstitial changes in the pancreas, and the presence in the blood-vessels of great numbers of bone-marrow giant cells. Conclusions drawn from the study of these two cases point to the early loss of splenic function, and its partial compensation by a new formation and hyperplasia of lymphoid and hemolymphoid structures. The splenic function of hemolysis is entirely lost in the late stage, and is compensated for by the hemolymph nodes and bone-marrow. The extensive destruction of red cells in the sinuses of the hemolymph nodes while as marked as in pernicious anemia is unattended by any deposit of hemosiderin in the liver or kidneys. It is, therefore, probable that this hemolysis is only compensatory for the lost splenic function and not the direct result of an intoxication, as in pernicious anemia. In splenic anemia we may, therefore, speak of a compensatory hemolysis, in pernicious anemia of a toxic.

**Chronic Lymphatic Leucemia Spleen Normal.**—Dr. George Blumer and Dr. H. C. Gardinier, of Albany, New York, presented a report of a case of typical lymphatic leucemia ending fatally after only two weeks of observation in which in spite of characteristic blood changes there was no enlargement of the spleen found at autopsy. The case illustrates the varieties of the condition that exists and will require further study for satisfactory elucidation. The history of the patient was that of an illness of one year characterized by progressive weakness and anemia with dyspnea and loss of appetite. The blood count showed 1,625,000 red cells and 130,000 leucocytes per cubic millimeter. The differential count of 500 leucocytes showed 480 mononuclear elements, 7 transitional cells, and 13 polynuclears, that is to say a marked lymphocytosis. Death occurred two weeks after the patient was first seen. The autopsy showed a lymphoid condition of the bone marrow with practically no enlargement of the lymphatic apparatus. The spleen was considerably enlarged, but the Malpighian corpuscles did not show enlargement.

**Similar Cases in the Literature.**—Dr. Osler said that Dr. Warthin's description was most suggestive and that there undoubtedly existed a number of cases in literature that would have to be classified under this heading of cirrhosis with stenosis of the portal vein. Personally he felt that such cases are by no means so infrequent as their present status would indicate. Dr. Welch said that he was glad to have his attention specially called to the pathological findings in this case. Specimens that he had preserved would doubtless present after Dr. Warthin's suggestive review some interesting details that had been missed before.

**Anemia in Children.**—Dr. John Lovett Morse, of Boston, reviewed a series of 22 cases of anemia in children. These show that there is a tendency to instability of the blood in children but there is no justification for the terms anemia infantum, pseudoleucemia, nor for the other special term splenic anemia of infancy. Enlargements of the liver, spleen, and lymph nodes develop independently of each other and depend rather on the general nutrition and the infectious agents present than on the specific blood disease. The size of the spleen especially is of no pignostic significance. A large spleen may diminish in size in a very short time if the danger line is once passed.

**Chronic Cyanosis.**—A New Clinical Entity. Dr. Wm. Osler, of Baltimore, described certain cases of chronic cyanosis with polycythemia and enlarged spleen which he believes constitute a new clinical entity. The first case that came under his observation was that of a physician, fifty-four years of age, whom he had long known and in whom, because of the almost permanent cyanosis, he had been very much interested. Notwithstanding the cyanosis, the man seemed never to be short of breath. Dr. Osler thought that he was probably the subject of chronic emphysema. On examination, however, Dr. Osler was surprised to find that there was no emphysema, no heart trouble and only very slight albuminuria with an occasional hyaline cast. His blood condition was, however, very remarkable, in that there were 10,000,000 red blood corpuscles. There was a slightly enlarged spleen, but the number of white blood-cells was about normal. Dr. Osler's second case had been five times in his ward at Johns Hopkins, with remarkable cyanosis effecting his whole body and causing him discomfort, though, as in the former case, there was no lung or heart trouble and only slight albuminuria. This patient had seven to eleven million red blood corpuscles. There was no leucocytosis. The hemoglobin value of the blood was very high. In a third case seen, the patient was a woman suffering from no emphysema, no heart trouble, but with a red blood count of from nine to eleven millions. She had been literally cyanosed for ten years. Her hemoglobin value was 165 per cent. As in the former cases there was a slight enlargement of the spleen, some slight albuminuria and a tendency to constipation.

**Ordinary Causes of Cyanosis.**—Usually when patients walk into a physician's office with marked cyanosis, he thinks either of congenital heart disease or of emphysema. Occasionally heart patients may be on their feet with severe cyanosis. At times, tuberculosis of the lungs causes marked cyanosis. These cases, however, form evidently a group by themselves. It is to be noted that in congenital heart cases the count of the red blood cells is usually higher than normal. The appearance of the patient, however, must not be taken as an index of the condition of the blood. Some patients have an extra hyperemia of the skin with anemia. This is the so-called anemia rubra. In one of Dr. Osler's cases, this florid appearance was preserved until the number of red cells fell below one and a half million. As an index of how little appearances count for as regards the blood condition, Dr. Osler recently asked a hospital physician to count the blood from the pale ear, the cyanosed foot and the normal looking hand of a hospital patient. The three blood counts agreed very well. Dr. Cabot has reported several of these cases and other observers have evidently come upon the same symptom complex, though without as yet definitely realizing that it was a distinct entity and to be considered by itself.

Dr. R. C. Cabot, of Boston, in the discussion, said that in his four cases the cyanosis was marked, the blood count very high, but that in two of the cases, besides enlargement of the spleen, there was also enlargement of the liver. The cyanotic skin took on a brownish shade from chronic congestion. In two of his cases venesection gave marked relief. In order to be sure that the increase in red blood corpuscles was not merely an accidental detention of red blood cells at the periphery Dr. Cabot counted also the blood from a vein, but found it agreed substantially with other blood counts. The fundus oculi showed dilated veins with contracted arteries. Dr. Cabot does not consider that a blood count of six millions to six and one-half millions should be called a polycythemia. Many strong young men in active vigorous life have a blood count from six to six and a half million. There should be at least seven and a half million before the condition is considered to be pathological.

**Further Examples of the Affection.**—Dr. Shattuck, of Boston, reported a case of chronic cyanosis with slight albuminuria which had been diagnosed by the attending physician as Bright's disease. The wife of the patient, however, who had formerly been a schoolmarm, declared the case did not look like Bright's disease and discharged the physician. This patient spat blood freely every morning. He was enormously cyanosed. One morning he vomited blood in great profusion. The attending physician declared that he must have vomited at least a gallon of blood. Instead of being disturbed by this great loss of blood, his pulse was easier and he felt great relief from symptoms. This gave Dr. Shattuck his idea that venesection might be of use in these cases and he found that it did actually prove so. The patient died afterward from gangrene of the foot due to the injury of an artery.

**Chronic Cyanosis Not Rare.**—Dr. Charles G. Stockton, of Buffalo, said that these cases of chronic cyanosis are evidently not so rare as might be thought from the fact that they are reported infrequently. He has recently had under his care an Armenian who suffered from frequent hemorrhages from the nose with a tendency to spitting up of blood. In his case there was slight dyspnea on exertion. The blood count showed over ten million red cells. While the patient suffered from no localized pain, he was in considerable distress, restless and uncomfortable.

**High Color and Anemia.**—Dr. A. McPhedran, of Toronto, reported a case of chronic cyanosis associated with polycythemia. He considered that as more careful search was made for these cases, they will be found more frequently. He said that it was not an unusual thing for anemic patients in Canada to have a high color. So much is this the rule that when patients come in complaining of not feeling well, yet present a healthy red appearance, anemia is at once suspected. One of Dr. McPhegran's patients had so high a color that she often heard people remark of her on the street that she must be painted. Notwithstanding this, her number of red blood cells was always under four million. When she complained of feeling ill, she was frequently laughed at because of her excellent appearance.

**Further Cases of Chronic Cyanosis.**—Dr. H. A. Hare, of Philadelphia, said that he had seen one of these cases of chronic cyanosis, but suspected at that time the presence of some obscure growth in the mediastinum which interfered with the circulation. This was supposed to account for the cyanosis. The fact that an excessive number of red blood cells were present was also noted, but this was thought to be due to the interference with the blood-making apparatus or with some of the important structures in the thorax.

Dr. Norman Bridge reported a case of polycythemia associated with prominence of the eyes and albumin in the urine. In this case he feared that the cyanosis was due to the abuse of coal-tar drugs. The patient has stopped the use of the coal-tar products, yet the cyanosis continues.

Dr. C. E. Edson, of Denver, reported a case observed by Dr. Hall in which there was an intense polycythemia with very severe cyanosis. In this case there was no emphysema and no heart disease. It is evident that polycythemia can exist independently of high altitudes and that the passing polycythemia of the recent advent into a high altitude is only an incidental affair.

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## AMERICAN SURGICAL ASSOCIATION.

*Twenty-fourth Annual Meeting, held at Washington, D. C., May 12 to 14, 1903.*

### First Day—May 12th.

**Contributions of Surgery to Internal Medicine.**—The President, Dr. Maurice H. Richardson, said that even in the event of our being so fortunate as to obtain an autopsy, there was the utmost difficulty in interpreting the living conditions from the dead tissues. The interpretation which the pathologist gives was apt to be altogether at variance with that which the surgeon finds at the operating table if he is so fortunate as to be able to take the time to make proper investigations of the case. This was admittedly the method by which so much progress has been made, by which the internists have been taught so much and is undoubtedly the means through which the great bulk of all lesions of the abdomen will be shown to be surgical rather than medical. One of the most important series of data which could be collected by the operating surgeon bears upon the position of the viscera during life. There is no doubt that the stomach in many cases, and the liver in not a few, occupies positions during life that are unknown in the dead house. The author pledged that in view of the relative safety of exploratory laparotomies very little hesitation should be shown in making them under suitable conditions, and he believes that if the surgeons of the day and of the future will scrupulously study and record the physical signs existing prior to operation and weigh them in the balance with those discovered after the abdomen be opened, a vast array of important data will be found. Then perhaps after years of such collecting a certain proportion of these cases will be positively diagnosed by the internist. Now, however, we are not in the possession of sufficient data to expect this.

**The Toilette of the Peritoneum in Appendicitis.**—Dr. Geo. R. Fowler, of Brooklyn, said that in case of general infection of the peritoneum, he believed the best technic to consist in thorough irrigation with salt solution by means of tubes so contrived that the current was directed toward the incision. He advocates the establishment of drainage in the lumbar region and advises the use of one in 2,000 bichloride gauze. He believes eventration and scouring under any conditions whatsoever to be a most unsurgical procedure.

**Operations Upon the Stomach with Special Reference to the Peritoneum.**—Dr. A. Vander Veer, of Albany, said that the peritoneum is our very best friend. Bearing this in mind, it is necessary to treat it on the strict principles laid down for friendship, viz., never to impose upon it. Impositions consist of traumata, which may be inflicted by mechanical or chemical means. To this end it is most desirable that as accurate diagnosis as possible should be made of the case, thus limiting the size of the incision and consequently of the traumatic injury to the peritoneum. All the fluid of the body with the exception of blood and normal bile are powerful irritants and should be carefully kept away from the membrane.

**Toilette of the Peritoneum in Tubercular Peritonitis.**—Dr. A. J. Ochsner, of Chicago, said that he wished to call the attention of the society to the fact that surgery had been altogether too aggressive in the treatment of the ascitic forms of this disease. Until it became fashionable a few years ago to attempt to remove the infected area, all these cases went on to recoveries. After this advanced technic was introduced, all of them went on to death. He, therefore, urged with much emphasis a return to the ancient but honorable technic of simple incision and drainage without manipulation or laceration of the infected area.

**On Septic Phlebitis of the Roots of the Portal Vein and on Pylephlebitis Together with Some Remarks on the So-called Peritoneal Sepsis.**—Dr. Arpad G. Gerster, of New York, said that appendicitis is the most common cause of this very rare but equally dangerous complication. The obdurating thrombi are generally found near the liver, and naturally their relative danger depends largely upon their type. Some thrombi are of a leathery consistency, and do not readily break up under the repeated minor pressures exerted by the recti and other abdominal muscles, whereas, on the other hand, if of the tubular variety, brittle and filled with pus, the slight motions of the part may readily suffice to break them and their contents. The character of the circulation in the liver is such as to enable the passage always of toxins sometimes of germs or even grosser portions into the systemic veins. It is thus easy to see that many cases operated upon by expert surgeons in the interval which inexplicably and as suddenly die, perish because of the liberation of thrombi which had formed in the portal vein or its radicals during the first acute attack of the disease.

**Toilette of the Peritoneum in Typhoid Operations.**—Dr. R. H. Harte, of Philadelphia, said that the appalling mortality of this condition called for a very rapid and thorough operation. The most important point in determining this operation lay in a recognition of the fact that 95 per cent. of all typhoid perforations occur in the immediate neighborhood of the iliocecal valve. This determines the position of the incision in the lower portion of the right rectus muscle. When found, the indication is not to excise the ulcer but simply to invaginate it, and if there be danger that this procedure may dangerously limit the size of the lumen of the gut, it should be simply sewed into the wound. Extravasation products should be washed away with great quantities of salt solution.

**The Toilette of the Peritoneum in Appendicitis.**—Dr. S. H. Weeks, of Portland, Maine, said that in the absence of pus, no drainage should be used. Concretions he believed were a frequent cause, necessitating secondary operations. They should therefore be sought for diligently. The method of treating the peritoneum when the intestines are found floating in pus is to irrigate through and through with normal salt solution and to insert glass drains through which gauze wicks have been passed to the remotest parts of the cavity.

**Toilette of the Peritoneum in Gunshot Wounds of the Stomach and Intestines.**—Dr. Geo. T. Vaughan, of Washington, described two classes in which drainage is indicated. The first class is those in which no peritonitis is found and is grouped according to the presence or absence of visceral contents or of hemorrhage into the abdominal cavity. The second class is complicated by peritonitis, which may be either local or general.

**The Treatment of Peritoneum in Spreading and Diffuse Peritonitis.**—Dr. Joseph A. Blake, of New York, said that there were two guiding principles in the treatment of the peritoneum. The first obviously is the removal of the nidus. The second, is to give the peritoneum every possible assistance in withstanding the infection. Whereas formerly he invariably drained all his cases very thoroughly, he recently has come to the conclusion that he was employing this technic with unnecessary frequency. Drains in themselves are often productive of intestinal obstruction, and there are many other factors besides the suction action of the diaphragm and gravity which determine the position of purulent exudates. This makes it impossible to decide where to place the drains in order that they may be most effectual. He found by a recent study of his cases that no less than eighteen days had been saved in that group of cases where he did not employ drainage, and furthermore that these cases had come back to a normal temperature in just half the time that had been occupied by the drained group. His treatment then, he said, consisted primarily in early operation, in copious lavage with salt solution, and except in the presence of necrotic material, in closure without drainage.

Dr. Munro, of Boston, in the discussion, said that he was unable to agree with Dr. Gerster as to the rarity of the condition described by him, and, furthermore, that it seemed to him that these cases of septic phlebitis occurred in the subacute variety of appendicitis rather than after interval operations. He believes that the retroperitoneal lymphatics are responsible rather than the liver for the dreadful cases of unexpected death which every surgeon meets with in uncomplicated appendectomies.

Dr. Gerster, in closing, said that to split the portal vein and remove the thrombus when such existed was obviously indicated.

**Subdural Implantation of Rubber Tissue in Operations for Inveterate Neuralgia of the Fifth Pair Without Removal of the Gasserian Ganglion.**—Dr. Robert Abbe, of New York, said that the success of operation depended entirely upon the depth at which the nerve is attacked. After a prolonged series of observations extending over many years, he has come to the very positive conclusion, which is supported by extensive clinical data, that all the superficial operations are so fleeting in their value to the patient as to be absolutely contraindicated and on the other hand that the frightfully dangerous and unnecessarily destructive extirpations of the ganglion are equally unnecessary and uncalled for. Seven years ago he began to place a piece of rubber tissue upon the bone after simple section of the second and third roots so placed as to completely occlude the lamina. He has many cases, including this one of seven years' duration, which are old enough to prove the absolute practicability and excellence of this technic. He does not use the bone flap incision because of its extensive scar, but enters by a vertical cut and trephines the skull. He controls hemorrhage by high ligation of the external carotid.

Dr. Geo. R. Fowler, of Brooklyn, in discussing this paper, said that he had tried the ligation of the carotid, but had recently utilized the temporary stoppage of circulation by means of a tape about both vessels. Great care should be taken not to include the jugular in this technic.

Dr. Geo. E. Brewer, of New York, said that eighteen months ago he encountered a terrific hemorrhage while endeavoring to remove a Gasserian ganglion, and as a result was obliged to interpose a piece of rubber tissue after the manner described by Dr. Abbe. A year ago he had voluntarily repeated the operation, and each of the cases was now in perfect condition. Dr. Abbe, in closing, said that he believed all cases of chronic trigeminal neuralgia to be due to infection, either from the teeth or from antrum of Highmore, and that the barrier interposed as suggested would in the vast majority of cases effect a permanent cure.

**Single Ulcer of the Urinary Bladder, Non-Tuberculous and Non-Malignant.**—Dr. G. E. Armstrong, of Montreal, reported a series of cases in which he had found this condition. He had endeavored to discover their etiology without success. He believed that they were not due either to syphilis, to neoplasm, to trauma, or to infection.

**A Case of Enchondroma of the Spinal Column.**—Dr. H. R. Wharton, of Philadelphia, reported a unique case of enormous cartilaginous growth from the right side of the lower lumbar vertebræ. It interfered seriously with the patient's locomotion as well as with his motion. Its removal was attended by no particular difficulty and effected a pronounced improvement in his symptoms.

### Second Day—May 13th.

**Therapeutic Value of the X-ray in Sarcoma.**—Dr. Wm. B. Coley, of New York, presented a series of 36 cases, two-thirds of the number consisting of the round-cell variety. Of this total number, it could be claimed in but four that the growth had disappeared, and unfortunately in these there was recurrence. In all, however, there is no doubt that a certain relief of symptoms can be obtained, although by the use of the X-ray alone sarcomata are not profoundly influenced.

**Use of the Combined Mixed Toxins and X-ray.**—He said that the best results are to be obtained by this combination, there being no doubt that occasional cases which our knowledge does not yet permit us to choose from the unfavorable class, are profoundly influenced, and if not absolutely cured, much retarded in their development by the exhibition of this treatment.

**Dangers of the Treatment.**—So far as this is concerned, it sums itself up into a judicious use of the agents, so that too much of the neoplasm may not be liquefied at once. Unless this precaution is taken, it is quite possible to make the patient extremely sick from septic absorption, and it is not outside the realm of the possible that metastatic growths may occasionally be caused by the absorption into the circulation of masses of still living malignant cells. Under no conditions does he consider it advisable to use the combination except in inoperable cases, or possibly very rarely in place of certain amputations. That the X-ray surely inhibits sarcomatous growth, particularly when used with the toxin, is not to be doubted. The cases upon which it acts favorably, so far as ultimate outlook goes, are, however, rare. But in these, it should be expressly noted that the treatment, particularly the rays, should certainly be continued for months and probably for years.

**Some Contributions to Surgery of the Gastro-intestinal Type.**—Prof. Joh. v. Mikulicz-Radecki, of Breslau, Germany, apologized for presenting such a meager contribution as he had to offer to the Association, but said that lack of time had prevented his preparing a paper suitable for the occasion.

**Cardiospasm or Dilatation of the Esophagus.**—This is an affection of midlife, only recently brought into prominence by his investigations. It is a progressive disorder, the main symptoms of which are due to the retention of food in the lower segment of the esophagus which, owing to an attenuation of the walls from physical and chemical causes, may in advance stages hold as much as a half liter of putrid fluid.

**Pathology.**—The condition is due to a spasm of the muscles of the cardia, their action resembling to a very great degree that of the sphincter muscles at other portions of the alimentary canal. The recognition of this condition is not difficult if use be made of the author's esophagoscope. An important sequel pathologically is the formation of secondary malignant growths which result from the chronic irritation.

**Therapy.**—Something may be done in these cases by repeated lavage of the esophagus and by tubal feeding, but if these be unsuccessful, nothing short of an operation will help. This he has practised through a large-sized opening in the stomach. The cardiac sphincter is best dilated by means of an ordinary glove stretcher instrument, and it is desirable to carry this dilatation as far as 7 cm. He looks forward to the time when he shall not only be able to operate through a very minute gastric opening, but possibly with an improved dilator entirely from above. The radiograph is of the utmost value, not alone in diagnosing this condition, but in determining the effect of treatment upon it.

**Peptic Ulcer of Jejunum.**—He has been able to find only 15 cases cited. Five of these occurred in his own practice. The symptomatology is very similar to that of gastric ulcer, the pain being the most important subjective symptom. Investigation showed him what is at least a remarkable coincidence, viz., that the ulcers follow certain operations upon the stomach, particularly anterior gastro-enterostomy. Without doubt, then, if this premise be accepted, it is a strong objection to the latter operation. Inasmuch, furthermore, as the anterior operation is very frequently done for the relief of gastric ulcer, in which a very marked hyperacidity of the stomach is well known to exist, it seems probable that the drenching of the delicate mucous membrane of the portion of the gut used in this operation which it will be remembered is somewhere about 20 inches below the pyloris, is a much more dangerous process than the similar flooding of the mucous membrane of gut used in the posterior operation, which is much denser and more habituated to resisting the acid, because it is only one-quarter that distance from the pyloris.

**Treatment of Benign Operations Upon the Stomach.**—Therefore he believes that this is an additional argument against the employment of gastro-enterostomy for any conditions in which use can be made of pyloroplastic operation, and he stated that, in his opinion, the modification devised by Finney was preferable to any other.

**Intestinal Intussusception.**—He detailed the most interesting account of a case, a woman in whom the tumor which presented at the rectum, was so large that it had become gangrenous and threatened her with death. He was unable to use the ordinary method of operation and instituted a special technic which was so successful in this and in his subsequent case that he desired to present it to the Association. It consists in abdominal section followed by a ligation of the tumor through the abdominal walls. A splitting of the intussuscipiens and a resection of the contained gut, which in his first case included the iliocecal valve and a considerable portion of ilium and colon. Under such conditions there is great difficulty in effecting the removal of the segment, and he was obliged to pull it out from above.

**A Personal Record of the Surgery of the Stomach.**—Dr. B. S. A. Moynihan, of Leeds, England, confined his remarks entirely to a consideration of the non-malignant diseases of the stomach, their recognition and treatment.

**Hemorrhage.**—Hemorrhage he divided into several classes, most important of which is that occurring from an acute ulcer, and from the chronic type. In the acute form, the vomiting of blood is sudden, the pulse quickly dropping into an alarming condition of prostration, and the patient evincing every evidence of internal hemorrhage. One of the most important characteristics of this class of hemorrhage is its self-limiting tendency and the remarkable transiency of the anemia following it. The characteristics of the hemorrhages arising from chronic ulcerations of the stomach can be conveniently grouped as follows: First, those which are latent and are characterized by minute concealed leakage which can be detected only by the most careful analysis of stomach contents. Second, those in which the hemorrhage is copious but transient. The subjective symptoms of this type are a pronounced indigestion and anemia. In the third type the hemorrhages recur with alarming frequency, although they come only after repeated and characteristic warning symptoms. They are abundant and grow gradually more severe, frequently a pint of blood being lost on each occasion of bleeding. The fourth class happily is very small and a limited one. It falls neither in the domain of medicine nor of surgery, since it is characterized by instant death resulting from the erosion of a great arterial trunk.

**Treatment of Hemorrhage.**—In bleeding from an acute ulcer, it is almost always sufficient to subject the patient to the usual medicinal therapy, and unless the hemorrhage should recur, the surgeon is not needed. If, however, he be called upon in such a case, the indication is to do as rapid a gastro-enterostomy as possible. As a rule he will find when operating upon these rather rare cases that the blood is coming not from a single point but from a weeping mucosa, which is leaking from every pore. Obviously no hemostatic agents known will aid in such a condition, and it is certain that nothing short of a gastro-enterostomy will limit the hemorrhage. The bleeding coming from a chronic ulcerative area is characterized by its issuance from a single spot, this being usually the mouth of a good-sized vessel which is held open by the dense structure at the base of the ulcer. The reason these hemorrhages stop is that they become plugged after a depression of the heart allows of the formation of a more or less firm clot. With the recovery of the cardiac action, of course, this clot tends to be torn loose by the heart's action, but this is a small factor compared with the motion of the stomach itself, partly due to the movement of its walls, partly to passive dilatation from decomposition. The author himself has excised the area but twice, and lost one of these cases. After that experience he made up his mind to limit his operations in the chronic as well as in the acute form of hemorrhage to the performance of a simple gastro-enterostomy combined with as little manipulation of the parts as possible. In 76 cases of this class he has had but one death. Nor is this the only reason for his giving the preference to the last-named operation, because, as is well known, the gastric ulcer is very frequently multiple.

**Symptoms and Pathology of Chronic Ulcer.**—Gastralgia is by far the most frequent and prominent subjective symptom. While hemorrhage may or may not be present, its absence certainly does not contraindicate the presence of a chronic ulcer. The condition is often mistaken for a malignancy both before and at the time of operation. When seized by the hand, the inflammatory growth about the ulcer is usually smooth. It looks clean and of a reasonably normal color. On the other hand, and as a possible means of differentiating it from the foregoing, the malignant deposit is nodular to the touch, grayish and often of a dirty look under inspection. The pathological conditions due to chronic ulceration are wellnigh innumerable, the walls of the stomach being warped into all conceivable shapes, which interfere not alone with the proper blood supply of the part, but also with its normal mobility and the motion of its walls. Thus it seems probable that a relegation of the dyspeptic to the hands of the gastric surgeon rather than to the dispenser of limited breakfasts and of peptogenic powders is the consummation which this year has brought us.

**Treatment of Dyspepsia.**—Then is to be considered along physical rather than chemical grounds, and many a wretched being who is now suffering and making others suffer, can be relieved by a simple and almost absolutely safe operation. Be the physical signs what they may, chronic dyspepsia is sufficient justification for exploration, and there is no operation in the domain of surgery which gives more brilliant results.

**Hour-Glass Contraction.**—The revolutionary part of the author's program here consisted in the announcement that this condition is not a congenital, but an acquired one. The two loculæ might, he said, be equal, but because of the dilatation which usually exists, and of the consequent dragging down upon the pylorus which interferes more or less with its patency, there is apt to be a difference in the size of the two pockets. The cardiac loculus being usually the larger, although, of course, this is determined more or less by the position of the bands. These again, since they usually follow chronic ulceration, are, as a rule, to be found nearer the pylorus than the cardia.

**Symptomatology.**—Unlike many other conditions in the stomach, this is a very positive matter. Any one who is capable of making intelligible observations is able positively to diagnose hour-glass contractions. The two important methods are undoubtedly the employment of a measured quantity of salt solution with a consideration of the amount returned and a manipulation of the stomach during the time that it is filled with the solution and the employment of Seidlitz powder separately taken for the generation of carbon dioxide gas. Percussion should be most carefully accomplished prior to the giving of this mixture, and the diagnosis becomes probable if the dilatation be confined largely to the cardiac end of the stomach, the pyloric sac filling a few moments later. Further in chosen cases, it is not impossible to see the compression bands forming a notch between the two pouches.

**Treatment of Hour-Glass Contraction.**—This may be extremely difficult, because of the density and the distribution of the adhesions causing it. Again, except the surgeon be remarkably careful, he will sooner or later make the mistake of overlooking the cardiac sac and will connect the pyloric loculus to the jejunum or duodenum, which, of course, will have absolutely no effect in curing the conditions. This implies then that it may be necessary in certain cases of hour-glass contraction in addition to doing the primary gastro-enterostomy, to perform a gastroplasty, a secondary gastro-enterostomy, a gastrogastrostomy or a partial gastrectomy.

Dr. W. W. Keen, in discussing this paper, said that Prof. von Mikulicz had dealt with conditions which were relatively unknown to him, but that he had had the opportunity while in Breslau, last year, of studying cardiospasm at the side of its eminent discoverer. So impressed was he by the beautiful mechanism of the von Mikulicz esophagoscope that he immediately purchased one, and has had the privilege of using it three times since. He is yet a novice in its employment, however, and for this reason he experienced some difficulty in diagnosing the condition as readily as he had seen it done in Germany. But he believed that this instrument, or one with the slight modification of having the light at the extremity of the tube would ultimately prove of utmost value to us in exploring this region of the body.

**Peptic Ulcer of Jejunum.**—Dr. Keen has seen no such ulcer following gastro-enterostomy, but he was delighted with the precision of von Mikulicz's observations in the matter, and could readily conceive how such necrotic areas might be produced in the delicate mucosa of the upper jejunum by the undiluted gastric juice. He judged that the method advocated of removing the intussusceptum was not unlike that of Maunsell for performing intestinal suture. He concluded by saying that there could be no manner of doubt that the radical surgery of the stomach has less danger associated with it than the old policy of waiting for developments. He cited two cases of his own, which graphically supported this view.

Dr. W. J. Mayo, of Rochester, Minn., had had but one case of cardiospasm, for which he had done a gastrogastrostomy rather than a dilatation on the principle of giving the part rest.

**Gastro-enterostomy Versus Pyloroplasty.**—The cases of gastric ulcer treated by gastro-enterostomy do not, in his opinion, undergo an improvement that is always lasting. This conviction has been forced upon him by the proportion of recurrences in a series of over 100 cases in which he has recently operated. Why is it that the procedure fails occasionally to give permanent relief? Probably because the patency of the enteric fistula depends upon the continued closure of the pyloric opening. In cases of chronic gastric ulcer, there is a stenosis of this orifice, partial or complete, produced by the congestion associated with the ulcerative process. So soon as the ulceration has ceased, or at least is held in reasonable check by the absence of irritating fluids passing over it, and by the rest which is afforded by the drainage after operation, the ulcer begins to heal. Immediately the pyloric orifice begins to open and as it opens, the fistula closes. Thereupon there gradually become re-established the very conditions for which operation was done, and most unfortunately the process cannot be inverted, for once closed the fistula can be opened again only through secondary operation. Hence it seems to him that pyloroplasty or some modification of it which shall remove the entire ulcer bearing area of the stomach, and thus not alone cure the primary disease, as well as interdict the possibility of its return, but prevent the remote but grave chance of the ulceration undergoing malignant degeneration.

Dr. Tillmann, of Leipsic, Germany, rose not to discuss the papers, but to thank the Association publicly for the great courtesy which had been shown him on this his first journey to America. He said that we probably did not appreciate how keenly the German medical profession enjoyed its close relationship with America. Science and art, he said, were truly international, and the great men of medicine could hardly be thought of as belonging to one country, since they were all working toward the one grand goal, the elevation and preservation of humanity.

Dr. William L. Rodman, of Philadelphia, said that despite the eloquence of Mr. Moynihan's plea for the exclusive employment of gastro-enterostomy in all nonmalignant diseases of the stomach, he still continued to doubt whether it should so frequently be employed in the treatment of acute and chronic hemorrhage. Mikulicz's explanation, furthermore, of the possibility of jejunal ulceration following it was an additional reason for seeking some better technic. True, the English operators were by no means to be blamed for looking with so much favor on a method which gave them such admirable results, but to him it seemed probable that the time was not far distant when, with opportunities to operate earlier, he should be able to lay aside gastro-enterostomy for the more radical and infinitely to be preferred pyloroplasty.

Dr. Leonard Freeman, of Denver, said that he agreed with Dr. Rodman, because he had recently had a case of acute and appalling hemorrhage from a gastric ulcer in a young man apparently sound in health. He performed gastro-enterostomy with immediate and gratifying results, but the man shortly after that died suddenly from a recurrence of the hemorrhage. This obviously could not have happened had he resected the ulcer-bearing area.

Dr. J. M. T. Finney, of Baltimore, arose, he said, to make just two points. The first was that, in his opinion, the most instructive deduction to be made from Mr. Moynihan's classic paper was that in order to quell gastric hemorrhage of any type, the stomach must be given rest and that it must be drained. The second point he desired to make was that in all probability the reason that previous pyloroplasties, many of which had been unsatisfactory, not giving relief simply because the lumen created was not of sufficient size. If drainage can be established at a sufficiently low point, in pyloroplasty, if suitable technic be employed, it drains the stomach through the natural channel which obviously must be better, and to him it seemed that pyloroplasty was the operation of the future.

Dr. L. M. Tiffany, of Baltimore, said that dyspepsia might from now on be considered exclusively a medical disease. He called attention to the fact that while the symptoms usually arise from lesions secondary to ulcerations of the stomach and hence within its walls, certain cases were dyspeptic because of bands resulting from inflammatory conditions in other organs, and involving the stomach wall secondarily.

Dr. N. B. Carson, of St. Louis, took exceptions to Dr. Mayo's statement that the gastric fistula is apt to contract after the opening of the pylorus and cited cases in support of this belief.

Dr. B. F. Curtis, of New York, stated that he had performed gastrotomy in a child nine years of age for the relief of cardiospasm, and had successfully dilated the stricture. He said in regard to hemorrhage that, as was well known, the most minute erosion might produce a prodigious hemorrhage, and he believed it justifiable to ligate the vessel on both sides of the erosion close enough to it not to run any risk of having ischemic necrosis. He had found this technic of service in more than one case. He was unable to agree with Dr. Moynihan that the surgeon unaided with a microscope should be able to differentiate malignant from benign lesions of the stomach.

Dr. Moynihan, in closing, gracefully alluded to the generosity with which his paper had been discussed, and said that he had left the old world, it was true, with a love for gastro-enterostomy and other special methods deep in his heart, but that he was ready and glad to say that what he had learned here would afford him thought for many days to come. The geography of gastric ulcer has yet to be written. If we are to believe the present statistics, malignant implantation is much more common here than in England, whereas our British cousins appear to be much more liable to perforation and hemorrhage than ourselves.

**Gastro-enterostomy.**—He said that whatever might be its future, this operation, in his hands at least, gave lasting as well as immediate results. He suggested that perhaps the reason why Dr. Mayo had not met with quite the same success in its employment as Dr. Mayo-Robson and he had, might lie in the difference of their technics. For himself he believed that the opening which he made was so free that no amount of variation in the lumen of the pylorus could ever effect it. Prof. von Mikulicz, in closing, said that he had been so impressed with the possibility of a jejunal ulcer following the irrigation of the jejunum with gastric juice as a result of anterior gastro-enterostomy, that he had recently performed a jejunostomy through which he fed the patient for the first two weeks.

**The Therapeutic Value of the X-ray.**—Dr. Arthur Dean Bevan, of Chicago, said that he had nothing strikingly new to present. Superficial epitheliomata melt away and disappear after 20 exposures from a soft tube at 100 volts and two ampères. In the lip, however, the outlook is not so favorable, since the mucous membrane of this part is peculiarly liable to the so-called burn. In the breast, which may be taken of a typical example of a moderately deep neoplasm, the rays will often produce an apparent cure, but the patient usually dies of metastasis. The effect of the rays is in general determined first by the situation of the lesion, the vitality of the cells having a very direct bearing. Second, the rapidity of their growth. Third, the size of the neoplasm determines the effect of the ray, inasmuch as their value varies inversely as the size.

**Indications for Use of Rays.**—If we assume, as we probably may, that the ray rarely if ever stimulates the growth of malignant neoplasms, its chief use seems at present to lie in superficial and slow-growing areas, particularly about the face. All others should be extirpated and followed as a prophylactic measure by at least 20 exposures from a soft tube. Naturally the most important problem is whether there be a possibility of extending the power of the X-ray which works so admirably on the superficial growth, to great depths. This might be accomplished along two possible lines, viz., the physicist might be able to augment their power of destroying low tension cells without increasing their danger to the normal tissues, or it might be possible to reduce the vitality of the cells of the deep neoplasms and get destructive effects with the ray as we at present know it. He has conducted a number of experiments along these lines, and with his associates has given to their experiments the name—"Radiochemic therapy." So far their chief work has been in the direction of attempting to liberate nascent iodine in the neoplasm by first giving the patient immense doses of potassium iodide, and then turning the rays upon the part.

**The Value of the X-ray in Superficial Epitheliomata and Tuberculosis.**—Dr. W. L. Rodman, of Philadelphia and Dr. G. E. Pfahler, of the same city, presented this paper. Dr. Rodman said that most of the work had been done by his colleague, who in a series of 234 cases of epitheliomata had found that 63 per cent. were reported cured and 36 per cent. improved. The average number of treatments for these cases being 25, and the time consumed about 8 weeks. Rodent ulcer presented a somewhat lower percentage of cure, the condition demanding a longer period of treatment. Of 75 cases of lupus vulgaris 65 were reported cured in eight weeks after 40 treatments. Lupus erythematosus was shown to be just as obstinate as the aforenamed variety. The final results in each, however, compared most favorably with all other methods of treatment. Tuberculous glands in ten cases had all shown favorable results, while in Hodgkin's disease, the results, even in glands very deeply situated, had been profound.

**Action of the Rays.**—This is not yet understood, but a certain degree of necrosis of the cells is early established, while at the same time a quantity of elastic tissue begins to develop. Some patients seem to have a marked idiosyncrasy to dermatitis and to loss of hair. One patient in their series having been burnt by a single exposure to a ray which had been turned twice a week for two years upon another case without even producing redness of the skin. Curiously enough the conjunctival tissue is not nearly so sensitive as the mucous membrane of the lip.

**Some Experience of the Treatment of Inoperable Malignant Disease by Means of the X-ray.**—Dr. A. B. Johnson, of New York, presented the histories of 10 cases, nine of carcinoma and one of sarcoma. Of this total eight had died. One, he believed to be markedly improved, and one he felt reasonably sure was cured. He did not speak with great hope as to the future usefulness of this therapeutic measure.

Dr. F. H. Williams, of Boston, said that the rays are probably of very little use after disease has involved a gland; that they are of value probably only in the absolutely superficial growths. He called attention to his fleurometer, by means of which an accurate measure could be made of the amount of rays which were passing from the machine. This ought to be used before employing the rays, so that burns might be avoided.

Dr. W. J. Hearn, of Philadelphia, would operate in every case no matter where it might be situated if it had the least semblance to malignancy, the two solitary exceptions being keloid and rodent ulcer.

Dr. Bevan, in closing, said that there was no excuse for using the rays on anything except absolutely superficial growths, as a postoperative prophylaxis and as an experimental study in non-operable cases.

Dr. Rodman said that undoubtedly the best treatment for epitheliomata and tuberculosis about the face and also occasionally for tuberculous glands was the X-ray. In deeper tissues, however, their action was as yet problematical.

Dr. Johnson said that all operable tumors should be removed, save on the face, when superficial. We do not as yet know the value or the limitation of the X-ray. and particular attention should be paid to an effort not to allow the general public to become possessed of the idea that the rays would cure cancer.

**The Results of Operation for the Radical Cure of Inguinal and Femoral Hernia with an Analysis of 1,000 Cases Operated Upon Between 1891 and 1902.**—Dr. Wm. B. Coley, of New York, said that his inguinal cases numbered 937, the femoral 66, 500 had been in children under fourteen years of age. It is a mistake to suppose that operations on children for the relief of hernia are easy. The technic should be followed out with the precisest care, and because the smallness of the parts is often a very difficult matter. He had performed Bassini's operation on nearly 200 women without a single recurrence. He is sure that the tense external abdominal ring, rather than the neck of the sac, as is generally taught, causes the majority of strangulations. Increased experience proves the value of absorbable material.

**Report of a Case of Gangrene of 15 Inches of Cecum and Ilium After an Operation for Appendicitis.—Relief of Anus after Repeated Operations.**—Dr. N. P. Dandridge, of Cincinnati, gave the full details of this case which was characterized by the formation of fistulæ which proved most difficult to close. Dr. Ochsner, in discussing the case, said that the Murphy button should always be placed in perfectly healthy tissue; otherwise fistulæ would result. It would have been much better to transplant the ilium into the ascending colon after amputation of the cecum.

Dr. Fowler, of Brooklyn, said that as he was responsible for the implantation method, he wished to say that the transplantation should have been into the sigmoid and second that circumclusion of the ilium below the button should have been accomplished by a silver wire so as to prevent the passage of any material over the part. Failure to do these things had given rise to the difficulties encountered by Dr. Dandridge.

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## AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS.

*Third Annual Meeting, held at Washington, D. C., May 12 to 14, 1903.*

**The Germ of Smallpox.**—The Wednesday Morning Session of the American Association of Pathologists and Bacteriologists, in their third annual meeting in connection with the Sixth Triennial Congress of American Physicians and Surgeons, was almost entirely given up to the consideration of subjects relating to vaccinia and variola. Dr. Howard, of Cleveland, discussed specimens of the ray fungus, as obtained from vaccine virus. In connection with Dr. Wier, of Cleveland, he also reported on the bacteriological investigation of vaccine virus, the methods employed and the results. Various secondary bacterial manifestations of variola were discussed, but the important paper of the session was by Dr. W. T. Councilman, of Boston, on the etiological factor in variola, a paper illustrated by lantern slides.

**Development of Etiological Knowledge of Smallpox.**—Dr. Councilman said that the first serious investigation in the etiology of smallpox which seems at the present time to have special value, was that made by Weigert in 1873. Weigert noted the inclusion of certain bodies in epithelial cells and made a study of them which is entirely objective and not interpretive. A little later Raymond saw the same appearances and declared that they were due to organisms. Guarnieri, in Italy, studied the details of these cell infusions and made it clear that they were no chance appearances nor due to optical delusions. These views had many opponents, especially in Germany and France, and it was not until Barsilewski, in Russia, gave a more definite description of these bodies that much light was thrown on the subject. The Russian investigator showed that they were not hyaline masses due to degenerative processes within the cells, but that they had a certain reticulated or network structure and that the appearances were specific to vaccinia and to the lesions of smallpox. Barsilewski was able to make eye to eye inoculation of material from these lesions, producing lesions of the same kind with the same epithelial inclusions.

**Opposition of Opinions as to Parasites.**—The only conclusion that could be drawn from the Russian observations was that these appearances were due to a parasite. The school of the Pasteur Institute, however, insisted that these bodies were only due to the fragmentation of leucocytes. Practically none of the French observers with a microscope were ready to admit the organismal nature of these inclusions. A number of observations were made in England, however, tending to confirm the idea of the parasitic nature of these inclusions and observations of the same tenor were made here in America.

**Technic of Investigation.**—Vaccinia may be transmitted to certain animals and produces specific appearances in the rabbit and in the cat. The cornea of the rabbit is used for experimental observations, because of its simplicity of structure and a perfect fixation of tissues can be readily obtained. When the cornea is inoculated, in the cells a vacuole is found in the midst of which is a body that takes stains rather freely and contains some chromatin. Careful examination of the body thus observed shows that its protoplasm, when the body has attained a certain size, has a reticulated structure. After a time the chromatin within the body takes on a branch tendency and is evidently on the point of division. Further stages of the parasite show the divided nucleus, and then a little later a number of nuclei, each surrounded by a small portion of protoplasm. These nuclei then, as separate bodies, are found in vacuoles for themselves in neighboring cells or in the original cell. These appearances are rather easy to find in vaccinia.

**Parasitic Bodies in Smallpox.**—In the deep epithelium of smallpox lesions, in early stages of the eruption, small inclusions are found which are never of the same structure but are evidently similar. The appearance presented is not as satisfactory as in experimental vaccinia on the cornea for technical reasons. In the smallpox issues, however, the metamorphosis of the parasite can be traced up to the stage of segmentation quite as in the case of vaccinia. The bodies observed passed through the same cycle. In smallpox another organism seems to appear as if somehow in vaccinia the organism in question did not accomplish its full cycle of existence. This differing organism can be seen in the nuclei of epithelial cells. It consists at first of small circles surrounding material that stains very faintly. There are faint appearances of chromatin. Gradually the rim of the circle increases in size. Then globular bodies appear in the midst of the rim. These become more complex in structure and have the appearance of vesicles. They stain well with iron hemotoxylin. They contain chromatin, but the chromatin is only brought out by long standing. At first the large central mass of the ring is pale and structureless, its outer edge surrounded by similar bodies with points of chromatin.

**Sporulation Stage.**—This more or less circular organism with vesicular appearances seems to be the parasite of smallpox in the sporulation stage. Whether these spores later become the sickle-shaped bodies that are so characteristic as one stage of the coccidium. Dr. Councilman does not know, and it has been impossible to trace the organism thus far even in vaccinia. Yet the connection between the bodies seen in vaccinia and in smallpox seems to be complete. In showing the specimens of the parasite in smallpox tissues Dr. Councilman called attention to the fact that as a rule these tissues were almost entirely without leucocytes; hence it does not seem probable that the appearances observed are due to degenerate leucocytes as is sometimes termed. The characteristic bodies can be seen with very low power and their inclusion within the cells is manifest. The appearance of fragmentic nuclei is very different from these appearances and would at once be recognized by any one experienced in microscopic technic of tissue examination.

**Exhibition of Specimens.**—Dr. Councilman then showed the elongate body occupying a space within the cell and showing more and more structure as the body became enlarged. Certain more or less dumbbell appearances suggest the ameboid form and chromatin points can be recognized here and there in the structure. In the oldest parts of the vesicular lesions of smallpox the parasite may be discovered in its nuclear invasion in what seems to be the sexual stage. At this time the cells surrounding it are greatly injured showing that the process is advanced. This intranuclear parasitism does not take place in vaccinia, but seems to be the sexual stage which does not occur in the milder or animal form of smallpox. Certain appearances give almost a double ring and occupy a position within the nucleus usually at a time when nearly all the true nuclear appearances are gone. This seems to be the femalė or macrogamete form of the parasite. A corresponding appearance, but occupying a position always outside of the nucleus and with certain characteristic differences, notably of smaller size, seems to be the microgamete or male element.

Dr. Councilman feels assured that these appearances can be traced with sufficient distinctness to make it clear that they contain a definite, developing structure whose evolution can be followed step by step and whose appearances indicate the progressive cycles of development of a parasite, which is evidently the etiological element in smallpox. Some of these conclusions have been confirmed by observations upon apes and there seems no doubt that this line of investigation will give interesting and important results.

## BOOK REVIEWS.

MATERIA MEDICA, For Nurses. By JOHN E. GROFF, Ph.G., Apothecary in the Rhode Island Hospital, Professor of Materia Medica, Botany and Pharmacognosy in the Rhode Island College of Pharmacy. Second Edition, Revised and Rewritten. P. Blakiston's Son & Co., Philadelphia.

THIS is an excellent little book for nurses and gives sufficient information without in any way encouraging the idea that the nurse should know sufficient about drugs to be able to use them clinically without proper direction. In fact, as is well known, the greater the knowledge the more the lack of confidence, and consequently the less likelihood of abuse in the matter of unwarranted drug administration. Dr. Groff has improved his manual in its second edition, so as to make it even more useful than before.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY. Being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery, drawn from Journals, Monographs, and Text-books of the Leading American and Foreign Authors and Investigators. Collected and arranged under the general editorial charge of GEORGE M. GOULD, M.D. Medicine. W. B. Saunders Company, Philadelphia, New York, London.

THIS year's number of the American Year-Book is well up to the high standard attained in former years. Even the inveterate reader of the medical publications and members of the editorial staff of medical journals, who must keep in touch with medical literature all over the world will find in certain cases practical suggestions and valuable additions to their information in the book. We note two chapters of suggestive value. Loeffler's declaration that where malaria has largely disappeared carcinoma has increased while carcinoma is very uncommon in the tropics where malaria is rife, led to the idea that infection with malaria might make a favorable treatment for carcinoma. Spitzly, Prochnik and Breitenstein, in discussing Loeffler's theory, show that many persons who have had or are actually suffering from malaria have actually developed cancer, shows that there is probably nothing in Loeffler's suggestion.

The discussion of the early diagnosis of tuberculosis shows an almost common consensus, on the part of diagnosticians, now not to wait for physical signs as an absolute necessity for the recognition of the disease. Such symptoms as a slight temporary albuminuria, sudden outbreaks of sweating, pseudo-rheumatic attacks, localized atrophies of muscles, more particularly those lying near the affected lung, especially the outer portion of the sternocleidomastoid muscle, are suggested as suspicious premonitory symptoms of the disease, while variations of pulse and temperature, for which no good reason can be found, carry the case beyond suspicion into the realm of the almost surely tuberculous.

DIE REIZUNGEN DES NERVUS SYMPATICUS UND VAGUS BEIM ULCUS VENTRICULI, mit Besonderer Berücksichtigung Ihrer Bedeutung für Diagnose und Therapie. Von Dr. WILHELM PLOENIES. Verlag von J. F. Bergmann, Wiesbaden.

Dr. PLOENIES' monograph gives an excellent idea of how many reflexes in different parts of the body may follow the irritation set up by gastric ulcer. Undoubtedly most of the clinical material thus gathered is suggestive for a practitioner, but the impression is produced that much of it should have been examined more critically. The irritation of a gastric ulcer becomes in an enthusiast's hands, as all pervasive throughout the body of reflex irritation as astigmatism or muscle balance in the hands of certain ophthalmologists. There are some excellent clinical suggestions given and a very full presentation of our present knowledge of gastric ulcer.

## BOOKS RECEIVED.

*The* MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

SURGERY OF THE HEAD. By B. Holmes, B.S., M.D. 8vo, 569 pages. D. Appleton & Co., New York and London.

MANUAL DE BACTERIOLOGIE CLINIQUE. By M. Funck. Second edition. 8vo, 239 pages. Illustrated. H. L. Lamertin, Bruxelles.

ANATOMY OF THE BRAIN AND SPINAL CORD. By Dr. H. E. Santee. Third edition. 8vo, 224 pages. Illustrated. E. H. Colegrove, Chicago.

LABORATORY TEXT-BOOK OF EMBRYOLOGY. By Dr. C. S. Minot. Small quarto, 380 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

DISEASES OF THE HEART AND ARTERIAL SYSTEM. By Dr. R. H. Babcock. 8vo, 853 pages. Illustrated. D. Appleton & Co., New York and London.

MASSAGE IN RECENT FRACTURES. By Dr. W. H. Bennett. Second edition. 8vo, 115 pages. Longmans, Green & Co., New York, London and Bombay.

DISEASES OF THE STOMACH. By Dr. F. Riegl. Edited by Dr. Chas. D. Stockton. 8vo, 835 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

DISEASES OF THE LIVER, PANCREAS AND SUPRARENAL GLANDS. By Drs. L. Oser, E. Neusser, H. Quincke and G. Hoppe-Seyler. Edited by Drs. R. H. Fitz and F. A. Packard. 8vo, 918 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

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## ORIGINAL ARTICLES.

### FRACTURE OF THE SPINE: THREE CASES.*

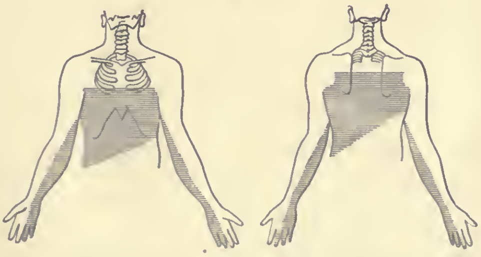
BY HOWARD J. WILLIAMS, A.M., M.D.,
OF MACON, GEORGIA;
EX-PRESIDENT MEDICAL ASSOCIATION OF GEORGIA, ETC.; SURGEON MACON HOSPITAL, ETC.

THE following cases are reported with no hope of adding anything new to the labors of such neurologists as Thorburn, Starr, Kocher, or Wichmann in the study of spinal localization, nor can I expect to suggest anything in the treatment of these traumatisms beyond a confirmation of the work of such surgeons as Horsley, Keen, Schneede and Lloyd. The three cases simply illustrate the paralytic, anesthetic and reflex inhibitory manifestations attending compressive and destructive lesions of the spinal cord resulting from fracture of the vertebræ located respectively in the cervical, the dorsal, and the lumbar regions. As they were fatal cases, in two laminectomy having been performed, I shall call attention to the errors in their treatment, with the desire that the discussion may bring out suggestions which will be of value in the future management of similar conditions:

*Case I.—Fracture of the Sixth Cervical Vertebra; Bilateral Paralysis of the Wrist, Fingers and Intrinsic Hand Muscles, Bilateral Anesthesia of the Inner Border of the Forearm and Ulnar Side of the Hand, and Complete Paraplegia below the Third Rib; Sudden Death in 27 Hours; Post-mortem.*

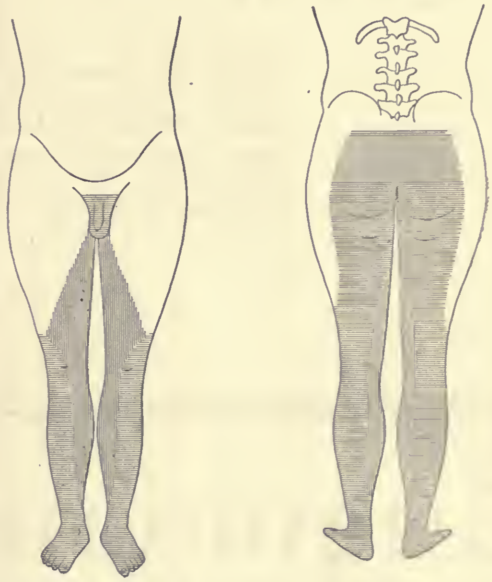
H. J., male, thirty years old, colored, brakeman; fell off a freight train at 4 A.M., June 26, 1900, and was brought to the Macon Hospital two hours later. He had sustained a lacerated wound over the right eye exposing the skull, and could not move his body or lower extremities. He was unconscious when found, but regained his wits before coming to the hospital. Shock was severe, yet he complained of no pain except when the wound of his forehead was sutured. There was a perceptible though not marked depression of one of the lower cervical spines with slight crepitus on gentle manipulation. Temperature, 97.6° F., pulse 50, respiration 16, on admission. He was placed upon his back on a hard mattress with the head fixed between sand bags; restoratives were employed to promote reaction.

Fig. 1.



Shaded lines, area of anesthesia.

Fig. 2.



Horizontal shading, complete anesthesia, vertical shading, delayed sensation.

Careful examinations conducted during the day revealed total loss of both muscular power and sensory control below the third rib, with a band of hyperesthesia extending around the chest above the rib; and absolute loss of all reflexes below the hyperesthetic band. The breathing was diaphragmatic, the chest muscles taking no part in respiration. Priapism was not observed. Vesicorectal paralysis was present. The pupils were contracted and would not dilate on pinching the sides of the neck. The arms could be moved at the shoulder joints with freedom; the forearms could be flexed and extended on the arms comparatively well, complete extension, however, was imperfect; pronation and supination was slow; flexion of the wrists and fingers was lost, but placing the wrists in the position of extreme flexion the man could extend the hands; there was complete loss of extension of the thumb as well as all use of the smaller hand muscles. Sensation was lost in the ulnar side of the hands, the little, the ring and the inner border of the middle fingers, both palmar and dorsal surfaces, this area of anesthesia extended up the inner border of the forearms and arms to the axillæ with diminished sensation of the anterior surface of the arms (Fig. 1). Tapping the anterior tendons of the forearms caused no flexion of the wrists, and the palmar reflexes were lost; the other reflexes of the arms and forearms were present.

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* Read by title before the Southern Surgical and Gynecological Association, Cincinnati, Ohio, November 12, 1902.

His condition remained practically the same during the night except that the pulse became intermittent and he was restless during the early hours of the second morning. At 7 A.M. he asked the colored orderly in the ward to turn him on his side. After being turned and before the orderly had walked the length of the ward the man ceased breathing.

On post-mortem examination the arch of the sixth cervical vertebra was found to be broken through the pedicle on the left and the lamina on the right side. There was no dislocation or injury of the body of the vertebra. The dura was intact but was red and injected; on opening the membranes only a small quantity of extravasated blood was observed, the hemorrhage not extending above the fifth and only a little below the seventh vertebral region. The spinal cord looked as though it had been pinched completely across by the depressed arch of the broken vertebra, the crushed section not being over half an inch in length, the segments above and below were not mutilated and only slightly injected.

The paraplegia in this case was evidently due to the crushing of the eighth cervical segment of the cord as it lies under the arch of the sixth vertebra. The symptoms were well defined: the area of the cutaneous anesthesia, the distribution of the muscular paralysis and the lost reflexes corresponded accurately with the symptoms enumerated for the eighth segment in Starr's tables for spinal localization. The cause of the fracture was doubtless the fall upon the forehead, in which the lacerated wound over the right eye was received; this sudden backward bending of the neck caught the sixth arch between the spine of the fifth and arch of the seventh vertebra, breaking it and wedging the fragment in upon the cord. The immediate cause of the sudden death was no doubt some interference with the phrenic nerve, when the patient's position was changed, arresting the action of the diaphragm. Park locates the center of control of the diaphragm in the third cervical segment, but the phrenic nerve receives a branch opposite the sixth vertebra and a sudden crush of this branch may cause a reflex interference with the function of the respiratory center.

In the management of this case, I regret that I did not at once fix the neck, head, and shoulders in a plaster-of-Paris dressing. It is possible that in turning the man in bed, the orderly gave the neck such a twist as to have caused the complete severing of a badly compressed and contused cord. I do not doubt that the final result would have been the same, however; nor do I think any operative treatment would have been of material benefit in the case had the patient's life been prolonged; still in the light of recent progress in spinal surgery the possibilities of myelorrhaphy are alluring.

*Case II.—Gunshot Fracture of the Fifth Dorsal Vertebra; Complete Transection of the Cord; Paraplegia; Laminectomy; Death on the Ninetieth Day.*

W. F., male, twenty-four years old, colored, farm-hand; was shot in the upper dorsal region 10 P.M., December 26, 1901, and lay exposed to a December rain until 6 P.M. of the following day. He stated that he fell and was helpless immediately after being shot, but never became unconscious. He was taken to the Roff Home, and I was requested to see him on the fourth day. Paraplegia, anesthesia, and abolished reflex action was complete below a line extending from the sixth dorsal spine to the ensiform process. Urinary incontinence from overdistention was present, tympany and fecal retention coexisted. Bed sores were beginning on the nates. Pulse 86, respiration 20, temperature 98° F. The ball, 38 caliber, had entered the back 1½ inches to the right of the fourth dorsal spine. The indications were that the cord had been severed, but upon his own solicitation, I operated December 31; ether anesthesia being employed. Dr. J. E. Wright, Dr. H. P. Derry and Dr. H. D. Worsham were the attendants. An incision six inches in length exposed the spines and laminæ from the third to the seventh vertebræ. The lamina of the fifth vertebra was found to have been penetrated by the missile; none of the neighboring vertebræ were injured. The spine of the fourth and arch of the fifth vertebræ were removed. The inner surface of the arch had been destroyed and the bullet was found buried in the body of the vertebra. The cord was completely destroyed for a space of five-eighths of an inch in length. Escape of cerebrospinal fluid occurred after the canal was cleared of blood clot and fragments of bone. A probe passed along the canal detected no obstruction, the wound was therefore irrigated with salt solution and closed with deep, interrupted silkworm sutures without drainage.

The temperature rose during the next twenty-four hours to 101° F., but gradually declined to 99.2° F. on the sixth day. On the twelfth day the stitches were removed, primary union having taken place. The bed sores, in spite of careful attention, grew rapidly worse, covering the entire buttocks and forming later on the posterior surface of the calves of the legs. Soon after the operation the feet began to swell, the swelling gradually extending up into the thighs. The upper part of his body, arms and face emaciated, and by the twenty-third day a severe cough had developed. Strange to say the man's appetite and digestion was at no time affected. The bowels were kept unloaded by salines and enemata. Careful catheterization preserved the bladder from infection until late in the progress of the paralysis, pus making its first appearance in the tenth week. In the seventh week he claimed that he could tell when the bowels would move and thought that he had some control over the bladder. These statements were confirmed by his attendants, but as there was at no time any evidence of returning muscular power, sensory control, or recovered reflexes below the chest, these signs of improvement must have been imaginary. On March 26, 1902, just three months from the day he was shot and twelve weeks after the laminectomy he died of septic infection.

I was extremely anxious to examine this man's spine after death, but he died while I was temporarily absent from the city and no autopsy was made.

The sixth dorsal segment of the spinal cord resting opposite the fifth dorsal vertebra was the portion of the cord destroyed in this case. The point of interest in the case, just at present, is the prolonged duration of life after complete section of the cord by a gunshot wound. In the references at hand of cases of gunshot wounds of the spine which have come to operation, five in number, three alone were cases of complete section of the cord. One recovered, the case reported by Drs. F. T. Stewart and R. H. Harte, notable because of its being the first recorded case of successful myelorrhaphy in the human being. Case 166, in Dr. Lloyd's references, a complete destruction of the cord, died on the twenty-first day after operation; case 167, of the same references, similar in character, lived thirty-one days. Both of these were in the upper dorsal region. My case lived eighty-six days after operation. Dr. Lloyd and Dr. F. H. Harrington of Pawtucket, R. I., each report a case of gunshot fracture of the spine with compression, successfully treated by removal of the depressed lamina. These two cases, cases of compression without destruction, cannot be classed with those of complete section of the cord, the condition is not so fatal and prompt elevation of the compressing bone successfully reestablishes the functions of the spinal cord.

Although poorly prepared to give the careful attention which such cases require, I am sure that this man's life was prolonged by the extreme care and cleanliness of two ignorant but faithful old negro men, attendants at the Roff Home, the county poor house. It would seem, however, from a careful review of many recorded cases, that while the fatality of spinal injuries decreases from the cervical to the lumbar regions, the upper dorsal region is the most tolerant of injury; that is, the average duration of life after injury is longer in this section of the cord. Perhaps this is due to the protection afforded by the fixity of this location against the disturbances of motion so dangerous in the cervical region, and the protection against wound infection afforded by the distance of the dorsal region from the usual sources of soiling, the escape of urine and feces, and the discharges from bed-sores over the sacrum and nates.

*Case III.—Fracture of the First Lumbar Vertebra; Motor Paralysis Below the Great Trochanters, Sensory Paralysis Below the Knees; Laminectomy; Death on the Nineteenth Day.*

R. S., male, forty-three years old, Italian, fruit vendor. On October 5, 1900, while attempting to place his fruit-stand on a dray, fell; the stand falling upon his abdomen, the small of his back was crushed against the edge of the curbing. He did not lose consciousness but suffered excruciating pain and could not rise. His family physician, Dr. J. W. Lee, removed him to the Macon Hospital and asked me to take charge of the case.

Shock was severe; temperature, 97.3° F., pulse 76, respiration 24. There was no external wound; but discoloration with bogginess of the soft tissues was present over the dorsolumbar space, and an irregularity of the spines of the vertebræ existed in the upper lumbar region. Girdling pain was felt around the pelvis; complete anesthesia existed over the scrotum, penis, perineum and below the outer condyles of the knees to the toes as well as in the back part of the thighs. Sensation was delayed from the middle of the anterior part of the thighs and inner side of the calves, (Fig. 2). Bilateral paralysis was present in all of the leg and thigh muscles except the psoas group. Cremasteric reflex was present, knee-jerk slow, plantar reflex absent. During the first twelve hours it was found that incontinence of urine and feces existed. Priapism was present.

The patient was placed on his back, extension and counterextension applied and anodyne treatment employed while awaiting developments. During the next two days but little change in his condition occurred. The evening temperature rose to 101° F. with a morning intermission; the urine had a specific gravity of 1.030, and contained albumin and sugar. October 7 he could move his adductors and rotate the thighs slightly; sensation in the outer side of the legs was slowly returning, that of the right leg being most markedly improved. No improvement in the reflexes could be observed. The rectovesical symptoms remained unchanged.

On October 9 bed sores on the nates were starting but the improvement in motion and sensation was such as to justify the belief that the cord was not destroyed and laminectomy was decidedly indicated. Assisted by Dr. N. T. Carswell, Dr. Lee and Dr. H. P. Derry, I operated, ether being employed. An incision beginning at the spine of the eleventh dorsal and ending with that of the fourth lumbar vertebra was made; the soft parts, badly bruised and infiltrated with blood, were separated from either side of the spines and the laminæ exposed. The spine of the twelfth dorsal and the lamina of the first lumbar vertebra were observed to be broken and depressed. The twelfth dorsal, the first and the second lumbar arches were removed. After the usual bleeding was arrested and old clots removed it was seen that the dura was not lacerated but was contused to the extent of an inch and a half or more. The dura began to pulsate as soon as the pressure was removed so it was decided not to open the membranes. There was no displacement or injury of the bodies of the vertebræ. The wound was washed out with hot normal salt solution, and sewed up, drainage being employed; a heavy iodoform gauze dressing with a spinal splint of woven-wire was applied and the patient returned to bed.

Reaction was good; the temperature ranged between 99° F. and 100° F. with a pulse of 88 to 110, for the first few days. The drain was removed on the fourth day, the wound looking healthy. By the eighth day after the operation he could move the thigh muscles, bending the knees slightly and flexing the toes of right foot feebly. He could feel the prick of a pin quite well over the outer side of the right ankle and leg, sensation was delayed in the left calf. Knee-jerk was marked. On the eighth day, feeling an inclination to urinate, he voluntarily passed his urine in the bed greatly to his joy but unfortunately soiling the bedding and his dressings. The next day his temperature rose from normal to 102.4° F. Exposing the wound a dark grumous discharge exuded; the stitches were removed and the wound was washed out. This was followed by a fall of temperature to 98.8° F. After this the wound required daily attention. On the twelfth day he began to be slightly delirious, had some stiffness of the neck with a rise of temperature and pulse. Evidently a septic meningitis had developed. From this time he rapidly grew worse, opisthotonos, wild delirium, convulsions, high pulse and rising temperature came on. He died October 23, 1900. No post mortem was allowed.

Comparing the distribution of the cutaneous anesthesia in this case with the charts of Starr, Wichmann, and Head, it is evident that the involved segment of the cord was the fifth lumbar with some irritation of the fourth; the distribution of complete anesthesia in the case, however, somewhat overlaps the areas outlined by Starr for the sensory distribution of the fifth lumbar segment. The incomplete anesthesia of the inner parts of the legs and the anterior portion of the thighs, the impaired but not lost patellar reflex, with the very early improvement of the muscular control of the adductor group, indicates some degree of compression of the cord above the first lumbar vertebra.

The fatal result in this case is clearly due, in my opinion, to the employment of drainage in the after treatment. The evidence of beginning primary union on the fourth day proved that the wound was in a healthy condition, and had the drain not been employed, the deep parts of the wound would have been sufficiently united to protect the cord from infection by the soiling of the dressings at the time when the patient voluntarily urinated without using the proper utensils for protecting his bedding. Primary union without drainage in the other case and infection in this one convinces me that drainage in such wounds is not only useless but is attended with danger.

In reviewing the recently reported case of successful myelorrhaphy performed by Drs. Stewart and Harte, in which the spinal cord at the seventh dorsal vertebra was completely severed by a pistol ball, I was impressed with the similarity between the conditions present in their case and in two of mine. In their case, there was a separation of three-fourths of an inch between the distal and the proximal ends of the cord without any extensive mutilation of the severed ends and very little hemorrhage or destruction of the bony and membranous coverings of the cord. In my first case, here reported, only one-half an inch of the cord was injured; in Case II the ball cut out a section five-eighths of an inch long; in both the ends of the cord were not mutilated, the hemorrhages were slight and the fractures limited; in Case II, that portion of the membranes traversed by the bullet was alone destroyed, in the other the dura was uninjured. These conditions would seem to be quite essential for the successful performance of the operation. Drs. Stewart and Harte succeeded in bringing the ends of the cord together and suturing them with some little difficulty over the distance of three-fourths of an inch; in my case the approximation, I think, could have been accomplished with less difficulty. My second case would have been an ideal one for the trial of this new operation; and since reading the reports of these operators, the question has suggested itself, would it not be justifiable in a case similar to my first, in which the extent of the destruction is limited but complete, to exsect the mutilated or crushed portion of the cord and approximate the freshened ends with sutures. What might be the results in the cervical segments would of course be extremely problematical; how much manipulation this portion of the cord can endure, and how much loss of tissue it could safely sustain, should resection be performed, no one knows. One feels, however, that there is little hope of successful results from myelorrhaphy so near the great trophic centers high up in the cord, and the risks of paralysis of the phrenic nerve would make the operation an extremely hazardous one. Lower down in the cord the results of this successful case demonstrates the possibilities of the operation and other successes will be reported from time to time. To what extent the cord can be resected and reapproximated with restoration of good functional results will depend, I should think, upon the amount of tension the nervous elements could sustain and still transmit nerve impulses; the tensibility of the cord will, of course, depend upon its looseness in the spinal canal; in this recent case, three-quarters of an inch was lost and the ends reapproximated, still restoration occurred. In the cadaver one inch of the cord has been removed and yet the ends could be stretched and brought together.

Previous to the appearance of the reports of this case, resection of the cord had been experimentally performed on the lower animals but without success: and, as Lloyd says, regeneration of the cord after complete destruction of its nervous elements was regarded as absolutely hopeless. This case now reopens the question and the surgical world has received a fresh impetus for renewed efforts to overcome these hopeless lesions. Why should not restoration of continuity and renewal of functions follow the approximation and suture of the highly organized cord as well as it follows upon ordinary nerve suture? We read of cases of paralysis cured by simple extension and counterextension in cords compressed by fractured vertebræ; in these cases is it not probable that besides the compression there is also some laceration of the nervous elements? McCosh, Lloyd, and others report cases of successful recoveries after laminectomy in old cases in which, besides the depressed bone, inflammatory changes in the membranes and cord have been found. If these cases are dependent upon compression alone the recoveries should be rapid, but usually the functions are restored by a gradual process. No doubt this gradual improvement is due in part to the regeneration of the injured cord. Fickler, in 1899, published two cases of compression of the cord from caries of the vertebræ, in which he found a number of delicate well constructed nerve-fibers emerging above the point where the compression had been located and returning into the cord below. As the cases had showed marked improvement in the symptoms after the affection had persisted a certain length of time, he accepted them as evidence of a regenerative process on the part of the spinal cord. Bielschowsky has reported a similar discovery in a case of compression of the cord. These cases suggest the conclusion that if the possibility of recovery exists in cords which have gone for a long time unrelieved of compression, new myelin sheaths developing around uninjured axis-cylinders, revivification of nerve-fibers long compressed, and even new fibers forming around points of obstructions, regeneration should take place between the ends of a severed cord when accurately approximated. Chipault speaks of two zones of injury in all crushing traumatisms of the cord, a zone of actual destruction and final necroses of the nerve elements, and a zone above and below the first in which there is injury but not destruction of the nervous elements and in which, after a few days the nerve cells increase in size, their protoplasm becomes granular, the axis-cylinders change and the myelin breaks into segments. This he calls the beginning of degeneration; may it not on the contrary be at first an effort at regeneration, a readjustment of the severed parts aborted finally by the intervening necrosed elements. Lloyd says that if the cause of compression is removed both axis-cylinders and myelin may in a few days begin to undergo regeneration. Is it not possible that the same process may take place if the zone of complete destruction is early removed and the zones of less injured nervous elements are brought together; regeneration then beginning union should take place across the intervening space? This possibility has been probably demonstrated in the case of Stewart and Harte, if their case is still living.

Instead of waiting for several days to ascertain whether the cord is completely destroyed or simply compressed, I believe we will now operate earlier in all cases of spinal fracture and oftener in the severer cases; knowing that even if the cord is completely crushed, the destroyed zone may be removed and the ends approximated with hope of successful union. Keen's rule that after the accident, if the knee-jerk is absent and remains so, operation is contraindicated, should hold good no longer; the absence of the deep reflexes should now be the most urgent reason for prompt exploratory operation, for it demonstrates that the cord is severed and if possible its continuity should be restored at once. Lloyd's reason for early operation—to antedate the stage of secondary degeneration and take advantage of the possibilities of early regeneration—will apply with equal force to the employment of myelorrhaphy in spinal crushing and to laminectomy in spinal compression. Laminectomy does not materially endanger life nor does it unfavorably affect the course of the case; it will now open the way by which myelorrhaphy may possibly relieve the lesion and perhaps restore the patient to a fairly comfortable life.

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## RHEUMATIC TONSILLITIS IN CHILDREN.*

BY JOHN STEWART, M.D.,
OF PHILADELPHIA.

THIS disease is of both catarrhal and rheumatic origin. It consists of an acute inflammation of the mucous membrane of the tonsils and, although some writers say that the inflammation is confined to the mucous membrane of the tonsil, it has been my experience to see many cases in which the whole of the gland has been involved, at which time it often becomes phlegmonous in type and is quite obstinate. It is characterized by its sudden onset with severe chills and fever, painful deglutition, sometimes a slight cough, an almost constant desire to clear the throat and a peculiar nasal intonation of the voice. There is sometimes hoarseness. The disease may occur at any age, though perhaps it is more frequent in young persons ranging from five to fifteen years of age, whom we are considering in this paper. There are certain individuals, though otherwise healthy, who exhibit a remarkable predisposition to it and this tendency may show itself in several members of the same family. One attack is almost certain to be followed by others of different intensity. Sometimes years intervene between these attacks while, on the other hand, there may be an interval of only a few weeks. It is nothing new to have a child complain of an attack of muscular or articular rheumatism and especially the latter, while an attack of tonsillitis is at its height. Rheumatic tonsillitis may occur epidemically, especially in the fall of the year, when great atmospheric changes take place. The cause is, of course, principally due to a rheumatic poison in the circulation, although chronically enlarged tonsils are very susceptible to inflammation when there is the slightest rheumatic tendency and the exposure to cold and wet must not be overlooked as a cause.

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* Read before the Northwest Medical Society of Philadelphia.

*Symptoms.*—Onset sudden with severe chills and fever, thirst due to lessened secretion from the tonsils, which afterward becomes increased, but is of a thick, tenacious character, and by the way, when you are called to see a child with this history you should always look at the throat and many times you will be surprised to see quite an inflammation of the tonsils. It seems peculiar, but true nevertheless, that children about five or six years of age will never complain of the throat, until it is almost an impossibility for them to swallow the saliva which may form in their mouths. There is headache, loss of appetite, coated tongue, bad taste in the mouth, foul breath, painful deglutition and almost constant desire to clear the throat, due to the inflammation which has extended to the uvula. The child will generally lay with the mouth wide open and either try to swallow the secretion or spit it out, which is a very annoying symptom, causing great pain at the angle of the jaw, and many times they complain of earache, which is due to the inflammation extending up the Eustachian tubes to the ear. In severe attacks it is not unusual to see the liquid nourishment forced out through the nostrils when the child makes an effort to swallow. This is due to the muscles of the palate being infiltrated with serum, which greatly interferes with their function. This is sometimes called paralysis of the muscles of the throat. Under normal conditions the contraction of the muscles of the anterior half arches of the palate prevents the return of the food and drink to the mouth, while the contraction of the muscles of the posterior half arches, together with the uvula, closes the passage to the nose, and if the function of these muscles be impaired in any way, fluids will be forced out through the nose or back into the mouth by the contraction of the pharynx in the act of deglutition. (I happen to have experienced this myself about two years ago.) The symptoms are often worse on one side than on the other and about the time that you think convalescence is going to take place, the other side may become involved. These cases may last about a week and a half to two weeks. This just reminds me of the prognosis. When I get a case of rheumatic tonsillitis, I always tell the parents that it will more than likely last for at least seven days and they may not see any signs of relief until about the fifth or sixth day, and in this way you will hold your patient, otherwise you are liable to be discharged about the fifth day and your successor will get the credit for the cure. The attack ends rather abruptly and convalescence lasts but one or two days.

*Diagnosis.*—Many writers say that it is a matter of no difficulty, when an inspection is made, but I have seen diphtheria and pharyngitis many times taken for tonsillitis. In rheumatic tonsillitis the onset is more sudden than in diphtheria, the temperature is higher and the redness of the throat is more diffuse. In tonsillitis the yellowish-white spots can be removed from the crypts and will disappear in two days, while in diphtheria it continues to reform for one or two weeks. In pharyngitis the whole surface of the pharynx is intensely inflamed, while in rheumatic tonsillitis the inflammation is more confined to the tonsils.

*Treatment.*—Calomel and saline is first in the treatment of this disease. Salicylic acid or sodii salicylas acts as a specific when given internally in small doses, say one gr. of the acid or about three grs. of the sodii salicylas, given every two hours. This, if given from the onset, will often prevent suppuration, shorten the attack and relieve the pain and swelling. Tr. guaiac ammon, if given in hot milk as a gargle, will often abort an attack and if the case has advanced to about the fifth or sixth day, it will give almost immediate relief. $H_2O_2$, 25-per-cent. solution, as a swab, will, if continued through the case, afford great relief. And as for Tr. ferric chlor. and potassii chlor., I have not seen very good results, although they seem to be prescribed extensively in these cases throughout the attack. It is not until convalescence that I use Tr. ferric chlor. and then only for a few days, to contract the tissues to their normal size. The diet should be in the shape of gruels, etc. Pellets of ice give relief. If suppuration cannot be averted apply hot applications and as soon as fluctuation can be detected, the abscess should be opened. At times it seems as though nothing gives any relief and at the end of seven days all symptoms of inflammation subside at once.

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## NOTES ON BLOOD PRESSURE IN MAN.*†

BY S. S. GOLDWATER, M.D.,

OF NEW YORK.

(Continued from Page 931.)

*Influence of Posture.*—Posture is capable of exercising considerable influence on intravascular pressure. The following figures represent pressures taken with the tonometer—first with the subject lying supine; and then in the vertical position, the hand resting on an ordinary table, approximately 40 cm. below the apex of the heart. Horizontal position: 114 94 111 130 100 105 108

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* This essay was awarded the William T. Lusk Memorial Science Prize by the faculty of the University and Bellevue Hospital Medical College, 1901.

† From the University and Bellevue Hospital Medical College.

Vertical position: 132 104 122 148 116 120 124
The average difference is 15 mm.

These figures may be compared with those of Gaetner, whose subjects showed, when lying down, a pressure 10 to 15 mm. less than when sitting. Where, in the sitting posture, the finger at the height of the nipple, the pressure was 105 mm., in the standing posture, the finger on the table 39 cm. below the nipple, pressure was 132 mm. From this experiment Gaertner concludes that a column of blood 36 cm. in height is equal to the difference between 105 and 132 mm. of mercury: or 27 mm. Hg-36 cm. blood. In a similar strain Grebner asserts that a change of position produces of itself no effect on pressure, provided the hand remains at the level of the heart.

Gravity, however, is not the sole factor to be here considered. The cardiovascular system is more than a series of inert containers having unchangeable dimensions. A change of position whether from lying to sitting, from sitting to standing or from lying to standing, is associated with variations in muscular and mental tone which produce reflex alterations in tension through the great nerve centers.

Besides, while gravity may directly cause a rise of arterial pressure in dependent portions of the body when a person who has been lying down rises to his feet, it must be remembered that when this change of position occurs, gravity for the moment favors ventricular systole, as it assists in conveying away from the aorta, where tension is highest, the great mass of blood which goes to the trunk and lower extremities. Hence we find Marey, in his classic work on circulation, declaring that "the vertical position tends to diminish arterial resistance and arterial tension."

In Albert's amputation case the passive raising of the body into the vertical position caused an increase of pressure in the anterior tibial artery, the rise amounting to 40 mm. of mercury. Here the elements of muscular and mental tone were eliminated to an extent which does not obtain in ordinary clinical experiments on conscious subjects. But even under the most favorable circumstances the problem is not reduced to a merely physical basis. The voluntary contraction of muscles which accompanies an ordinary change of position, is capable of materially affecting the nerve centers presiding over cardiovascular action. Furthermore these centers are constantly responding to the blood supply which they receive, and this supply inevitably is affected by important changes in vascular tone in any considerable part of the body from whatever cause.

Practically, however, the clinician can afford to pass over the more abstruse phases of the subject of posture. The practical point is that posture is not to be disregarded and thus inadvertently varied in using the tonometer or sphygmomanometer in any given case. If records are invariably taken with patients in the same posture, no further heed need be paid to the matter clinically, as in that case, whatever may be the finer interrelations between one artery and another, or between the arteries in general and the heart, the same conditions will govern the findings of the apparatus in successive observations.

*Muscular Exercise.*—We have already seen that the irritation of sensory nerves by muscular contraction is one of the many means by which vascular tension may be enhanced. Where many muscles are continuously exercised, pressure on arterioles, capillaries and veins also comes into the foreground as an element in the production of high tension. Furthermore the mental condition associated with purposive muscular acts is to be kept in mind, as well as changes in the quality of the blood and later alterations in mental tone which arise from prolonged physical exertion.

Broadbent theoretically argues that the effects of exercise on blood-pressure are fugitive, since, owing to the transference of blood from the veins to the arteries by the frequent and powerful cardiac action which accompanies muscular effort, ultimately there occurs an exhaustion of the surplus fluid which constitutes the means by which arterial tension is raised; then the ventricle, although it may act forcibly and frequently, does not receive a full supply of blood during its diastole, and the total amount of fluid in the arterial system cannot further be increased.

But let us inquire again whether the arterial system may be fairly compared, during periods of exertion, to a system of containers of unchanging capacity. Manifestly it can not. So far as cardiac action is separately concerned, it may well be that the effects of exertion are fugitive; but the fact is that cardiac action is here but one of a series of indissolubly associated events, whose combined influence on blood-pressure may be less fugitive than Broadbent assumes.

Records made by the writer before and after a series of half-hour morning walks and before and after stair-climbing, showed invariably in the latter instance, and with a very small percentage of exceptions in the former, a rise of pressure (associated with an increased frequency of pulse) following the exercise periods.

An extensive series of experiments was made by Jellinek, with marching soldiers as subjects. Three measurements were made by Jellinek in each case, the first in the morning before the march was begun; the second a half-hour later during the march, a brief stop being made by each subject only for the purpose of making the required test; and the third, from two to two-and-a-half hours after the beginning of the march. The results varied. In some instances a rise of pressure was recorded; in others there was no material change; and in a third group a fall of tension was observed. In every case the pulse gained in frequency; and the experiments illustrated the possible dissociation of pulse-frequency and intra-vascular tension In other varieties of muscular effort, however, Jellinek found a rise of blood-pressure; and his conclusions conform to those which have been commonly reached by workers in this department.

Marey's teaching was that muscular activity is followed by a diminution of arterial pressure, but more recent writers have almost universally found the reverse to be true under normal conditions. The following may be quoted:

*Colombo:* Gymnastic exercises (not specified) raise blood-pressure 20 mm.

*Zadek:* Muscular exercise produces a rise of 10 to 20 mm. Rarely an increase of 30 mm. follows severe exercise.

*Grebner:* Sixty-five cases showed a rise of pressure in proportion to the severity of the work. A rise occurs promptly at the beginning of muscular work; a tendency to further increase, with periodic remissions, is manifest during a continuance of the work and at its conclusion a sudden fall occurs. Remissions during work are sometimes accompanied by sweating and in these instances the remissions are more marked.

*Kornfield:* In general, the rise of pressure is in proportion to the amount of muscular effort. The same amount of muscular work in different individuals produces different results.

*Jellinek:* A rise of pressure in conditions of muscular work is rarely absent. Usually there is a fall of pressure within a few minutes of the conclusion of the work. Old persons with hard arteries show the most marked response to muscular effort.

*Weiss:* Moderate (not exhausting) bodily labor causes a high pressure.

These rules are especially to be borne in mind in studying the effects of drugs on blood-pressure, and in the treatment of conditions of abnormally high pressure where prompt relief is considered important. To disregard them in the former case would be to leave a loop-hole for the admission of avoidable complications; while in the latter, a failure to take advantage of the effects of rest would be to throw away a powerful ally to successful treatment.

*Baths.*—The painstaking work of Lehmann, Bain, Schweinberg, Pollak, Jakow and others in relation to the effects of baths on blood-pressure has established data on which the clinician may intelligently base his use of the bath as a therapeutic measure. The chief experimental obstacle in this department is the difficulty of eliminating the several influences of physical motion and of psychical excitement. The results of the experiments that have been made point to a lowering of blood-pressure by warm baths and a raising of pressure by cold baths: but these rules only obtain under proper conditions.

The writer can testify from his own experience that in the case of a healthy person a merely cool bath at 55° to 60° F., extending over only a few minutes, and followed by the slight exercise incidental to the rapid use of a rough towel, will scarcely influence blood-pressure at all. Here the physical exertion in itself would be sufficient to account fully for the average rise of pressure of 3 mm., shown by experiments repeated each morning for a week.

Mosso obtained a fall of pressure amounting to 30 mm. by baths at 40° to 43° C., extending over a period of twenty minutes.

Colombo, by a bath at 50° C. raised the lower limits of pressure from 70 to 100, and the upper limits in this series of cases, from 85 to 110 mm.

Gumprecht's warm baths produced a fall of 40 mm.; and Bain, after spending seven minutes in the hot room of a Turkish bath, where temperature was 39 C., noticed a fall of 45 mm., with a simultaneous increase in pulse frequency from 70 to 120 per minute.

Inasmuch as cold baths decrease the heart's frequency, strengthen its force and raise blood-pressure, it is evident that they are contraindicated in all conditions in which hemorrhage is threatened, as aneurism, atheroma, fatty degeneration and chronic nephritis. Lehmann, on the ground of theoretical considerations and also after clinical observations, recommended their use in "moderate weakening of the heart," by which he meant conditions of valvular disease with low blood-pressure.

In a subsequent section the question of blood-pressure in febrile states will be discussed. Here it will only be stated that in conditions of pyrexia, cold baths seem to have peculiar power to lower blood-pressure.

*Massage and Perspiration.*—Colombo reports that a rise of blood-pressure, which lasted for fifteen minutes, was produced by massage continued for five minutes over very large cutaneous areas.

It is well known clinically that generous perspiration is promptly followed by a relaxation of arterial tension. In conditions of anxiety a high pressure gives way and falls suddenly as perspiration breaks out (Kornfeld). Similarly, when tears begin to flow pressure falls. In both of these instances, however, psychical complications are present.

*Local Pressure Alterations Produced by Aneurisms.*—A useful sphere for the diagnostic application of the tonometer is found in certain cases of aneurismal and other tumors, where there is interference with circulation on one side of the body, but where this interference is insufficient to produce a difference perceptible to the touch, between the radial pulse of one side of the body and that of the other. Naturally a number of comparative tests must be made before any conclusion can be reached, as only thus can evanescent influences be eliminated and possible errors in technique set aside.

Efforts have been made to show that there is permanently a difference between right and left radial pressure, but this has by no means been demonstrated. In tests made by the writer on men, women and children, no rule of difference could be established. Hence where a permanent disparity between right and left arterial pressure is found a local cause may properly be sought.

*Case I.*—J. S., male, age thirty-nine years. History of a supposed chancre fifteen years previously, no secondary symptoms. Left vocal cord paralyzed. Apex extends to left of the left nipple and area of cardiac dulness reaches from this point to a line one-half inch to right of sternum. Visible pulsation in the second intercostal space, especially on left side, and a less marked area of pulsation on right side at same level. Bruit on left; expansible pulsation with ear applied to chest. Radial pulse scarcely perceptible on left side. The tonometer records were merely of interest as showing the actual difference between left and right arterial tension. Right, 120, 122, 128, 124 mm. Left, 75, 75, 80, 80 mm.

*Case II.*—John D., male, age forty-eight years. Specific history. Pulsating tumor first noticed two years previously, and now causes considerable forward displacement of the left upper part of the sternum. Three students were asked to compare the radial pulse of the left side with that of the right, and failed to detect any discrepancy. With the tonometer the following was shown: Right, 132, 130, 132 mm. Left, 105, 106, 102 mm.

*Case III.*—John G., age fifty-three. History of this case lacking. High tension pulse; urinary analysis negative; slight dilatation of the right pupil. The apex beat was located three-fourths of an inch left of the left nipple, and a systolic apical murmur was present, transmitted to the left. Liver and spleen both enlarged. Tonometer: Right, 240, 245, 242 mm. Left, 205, 205, 211 mm.

This case was doubly interesting inasmuch as it exhibited on the right side the highest tension found in the whole range of the writer's experiments and next to the highest pressure recorded in any published case.

*Arteriosclerosis.*—Arteriosclerosis was one of the first subjects to attract the attention of experimenters at the time of the introduction of the earlier instruments for ascertaining blood-pressure in man. A large part of the work done in the fertile period between 1880 and 1887 was limited to this field, and since von Basch's summing-up of European records made by means of the sphygmomanometer prior to 1887, no material addition has been to our knowledge of the intravascular conditions which prevail in sclerosis of the arterial system.

That extremely low as well as high tension may exist within sclerotic vessels, is illustrated by the following cases:

*Case I.*—Lainger, male, age fifty-two years. No appreciable radial pulse. Apparently radial arteries fail to expand, but they may be felt below a point where the pulse is obliterated by pressure, as extremely firm and resistant cords. The patient complains chiefly of shortness of breath and vague thoracic pain. For two weeks prior to examination had been resting in the ward, receiving during this period strychnine, $^1/_{30}$ gr., t. i. d. Pulse, 112; rather weak. Tonometer: 80, 82, 80 mm.

*Case II.*—Hefter, male, age sixty-three years. Arteriosclerosis, associated with renal disease. On admission to the hospital urinalysis showed albumin 50 per cent. by bulk, but this had been gradually reduced under treatment to a mere trace. Heart sounds strong, the second accentuated; systolic murmur at apex with slight transmission to left. Tonometer, 174, 162, 160 mm. These measurements were made on successive afternoons; a week after the last interview, notwithstanding the reduction in the amount of albumen in the urine and the apparent gradual approach by the patient to a condition of comfort, a fatal convulsion occurred.

*Case III.*—Harvey, male, age fifty-six years. Negative history, except as to laborious occupation, which was considered cause of an extreme enlargement of the heart; the apex beat was found on the lower confines of the sixth space, and cardiac systole seemed to lift the entire anterior wall of the chest. No murmurs. The patient related symptoms of an acute dilatation repeated four times in three years. His last attack brought him into the hospital two weeks before the first application of the tonometer to the case. Intense edema of the lower extremities had gradually disappeared under the administration, in the hospital, of diuretin, jalap, glonoin. A pulse of 144 was recorded when the patient entered the hospital; examination of the chest showed that the cardiac frequency was still almost as great as this, but at the wrist appreciable pulsations had diminished to 60, 50, 48, 54, and were decidedly irregular. The radial arteries, after partial obliteration of the pulse by compression, were extremely hard to the touch, and were punctuated along their course by distinct nodular elevations, which could be felt wherever the artery was accessible. Tonometer, 140, 138, 144 mm.

Too frequently, in clinical practice, a physician will make a diagnosis of arteriosclerosis because a pulse presents the characteristics of high tension. The fact that the pulse is difficult to obliterate by pressure which is made properly in a favorable location, indicates high arterial tension, but is by no means an indication that an artery is sclerosed.

Osler says that "it may be difficult to estimate how much of the hardness and firmness is due to tension of the blood within the vessel and how much to the thickening." It would be well to add that when blood is flowing through a sclerotic artery, the proportion of resistance due to thickening of the arterial wall is such an extremely small part of the total resistance, that practically it may be disregarded. By the sphygmomanometer radial tension in a normal individual is frequently found to be as high as 130, 140 or even 150 mm. of mercury. This is the resistance which opposes an attempt to annihilate the pulse-wave by pressure. Now, von Basch has shown that normal arteries of good size taken in a fresh condition from the human subject, will not fall together when empty, but will yield to a pressure of 1 mm. of mercury; and in empty sclerotic arteries, where the pathological change is of an advanced grade, a pressure of 5 mm. suffices to obliterate the lumen. Thus it appears that the total difference in resistance due to arteriosclerosis is equal to 4 mm. of mercury—a negligible fraction of a total resistance which is likely to run up to or beyond 150 mm. in cases in which the diagnosis of sclerosis is attempted by the touch. Where distinct nodules can be felt along the course of a vessel the recognition of its condition is easy; but here the sensation of roughness, not mere lateral resistance, is the informing agency.

Osler, however, very properly instructs his readers, that, in the attempt to diagnose arteriosclerosis by digital examination, one must first compress the artery and must then palpate below the point of obliteration of the pulse. By this manipulation the proportions of resistance are entirely changed, because blood-pressure has been at least partially excluded below the point of compression. In the case of an empty artery the task is to detect by the touch the difference between a resistance of 1 mm. and one of 5 mm., allowance being made in the living subject for the resistance offered by the intervening tissues.

Digital examination fails utterly to reveal arteriosclerosis in those cases in which there exists sclerosis of the smallest arteries, but in which the larger, palpable vessels are not appreciably changed. Blood-pressure apparatus will not overcome this obstacle to diagnosis; but it will furnish an excellent check on a physical examination conducted according to the formerly prevailing methods. Successive tests will reveal in graphic form the gradual rise of tension in what has been called the "presclerotic" stage, and frequently will indicate, long before the palpable arteries are noticeably altered, the need for measures to reduce the strain on the long-suffering vascular system. Without the information furnished by the tonometer these cases ordinarily would be diagnosticated, according to the predominant symptoms in each case, as indigestion, neurasthenia, insomnia, etc., and treated accordingly.

Reverting to the statement already made, that extremely low as well as quite high tension may exist in sclerotic vessels, one may say that in general terms these phenomena are dependent on the condition of the heart. Where a hypertrophied heart overcomes the resistance of rigid arteries, pressure is, so far, high; where weakening myocardial changes have occurred, whether of the nature of valvular insufficiency or of degeneration, pressure is low.

*Nephritis.*—The value of supplementing ordinary methods of clinical examination by the use of the tonometer is nowhere more apparent than renal disease, and indeed in all those conditions in which the excretory organs are failing to perform properly their functions. In the discussion of the blood-pressure of pregnancy a case was cited in which the accidental discovery of unusually high arterial tension was the first indication given of a serious renal complication. The tonometer in this instance recorded a pressure of 185 mm., a degree of tension by no means uncommon in chronic disease of the kidney.

The highest pressure found by the present writer in any case of albuminuria was 205 mm. In this case there were no convulsions up to the time the patient passed from observation:

*Case McGill*, male, age thirty-five years. Urinary analysis, August 18, showed 30 per cent. of albumin (volumetric test). Hyaline and granular casts were present. Repeated examinations of the urine from July 2 up to the date just mentioned showed albumin constantly present, and always more than a trace. Tonometer: August 19, 195 mm.; August 20, 205 mm.

The highest pressure revealed by the tonometer in any published case is that of a woman of twenty-two, whom Weiss saw, and whose history includes an account of albumin and casts. Here uremic convulsions finally set in after pressure had been for several days as follows: 280, 245, 245, 255 mm.

In nine cases of chronic nephritis studied by the present writer, the average pressure was 171 mm.

Abundant researches have well-nigh exhausted this phase of the subject of blood-pressure, and have established as an almost invariable rule the presence of high arterial tension in cases of nephritis. Nevertheless, to go so far as to assert—as did a recent contributor to a New York medical journal—that "the tonometer may render a diagnosis of chronic nephritis without a microscopical examination of the urine," is to disregard a number of pathological conditions which present, so far as the tonometer is concerned, phenomena indistinguishable from nephritis.

Christeller explains an absence of high tension in exceptional cases of chronic nephritis by saying that in such cases there is not present cardiac hypertrophy or arteriosclerosis. This, however, ignores the fact that independently of cardiac overgrowth and of changes in the arterial walls, or rather, prior to the development of these structural alterations, imperfect excretion may produce a rise of tension by causing to be retained in the blood products of metabolism which excite capillary resistance, possibly by increasing cohesion between the blood and the capillary walls.

Many substances, when injected into the circulation, will promptly increase blood-pressure in a manner not explainable either by increased cardiac action or organic vascular changes, and in fact, entirely aside even from all nervous vasomotor control, as has been shown experimentally. On this theory rests (in part only, for nervous influences cannot clinically be excluded by division of nerves) the explanation of the "presclerotic" stage of high tension already referred to. Along these lines also Federn's "prearthritic" high-tension is to be explained. Federn maintains that if pressure can be lowered in certain cases, muscular, fascial and joint pains can be banished and the threatened development of arthritis in young persons subject to such pains, can be averted.

The eliminative and prophylactic treatment indicated in cases of accumulation of waste products, would include a reduction in animal food, a reduction or entire cutting-off of alcohol, the free use of water and the purgative use of mercury. Common practice would suggest the use of nitrites as an auxiliary measure, but this is largely symptomatic treatment, dealing with the condition of high tension itself and not with its cause, except in so far as nitrites are diuretic and diaphoretic.

*Effects of the Nitrites.*—The effects of the administration of nitroglycerin in $^1/_{100}$ minim doses four times a day, were studied in a patient having normal kidneys.

*Case A.*—Haslitt, male, age twenty-eight years. August 7, pulse 90, regular, tonometer, 145 mm.;

August 14, pulse 86, regular, tonometer, 142 mm.; August 26, pulse 95, irregular in rhythm and force, tonometer, 135 mm. In the interval between these examinations the patient took four times a day, one minim of spirits of glonoin. A history of attacks of palpitation had been given, and the patient was instructed to rest as much as possible. As a result of this combined treatment, there occurred in nineteen days a fall of pressure amounting to only 10 mm. This slight fall of pressure might reasonably be attributed to the unusually quiet life led by the patient, or might even have been due to accidental causes. The effect of the glonoin, which was administered, is not apparent.

*Case B.*—Whalen, male, age twenty years, laborer. Heart forcible and regular. No history bearing on blood-pressure. July 26, pulse 80, (1/100 m. nitroglycerin four times a day), tonometer, 127 mm.; July 28, pulse 74, (nitroglycerin continued), 124 mm.; July 30, pulse 76, 137. Patient rested for an hour before the first examination, but walked two miles before the third. Again the drug used fails to show any satisfactory evidence of its ability to control arterial tension.

These are usual results of the use of nitroglycerin in dispensary practice. No doubt better results are obtained in hospitals and wherever rest and other agents are combined with the drug. But how far the drug is responsible for effects produced by the combined treatment, it would be difficult to say.

Thorne, in his article on the relation between high tension and nervous diseases, expresses his conviction that sodium nitrite has the power to banish headaches, in some instances, through its action on the vascular system. Thorne suffered from such headaches for some time, and sought relief in vain until he attacked in this manner his high-tension pulse. To the persistent use of sodium nitrite in one grain doses he attributes a lowering of his usual pressure, recorded at midnight, from 170 mm. to 130 mm.; and simultaneously with this arterial relaxation his headaches disappeared.

One would like to be able to examine in greater detail the daily life of the subject of Thorne's experiments before accepting his record as conclusive evidence of the potency of the drug. When Thorne tells of a headache occurring at night, blood-pressure at the time being 170 mm., and attributes to two grains of sodium nitrite the absence of the headache in the morning and a fall of blood-pressure to 122 mm., is it not pertinent to point out that in the foregoing chart "A" in the present article, showing pressure variations independently of the use of drugs, nine hours' sleep was able to bring about a fall of tension from 170 to 108 mm.?

*Organic Heart Disease.*—It cannot be maintained that as yet any material result has been achieved by the study of the relations between blood-pressure and valvular disease.

Frequent and forcible cardiac contraction is recognized as one of the chief elements in the production of a high-tension pulse; and hence it is very easy to say that in valvular disease tension is high in proportion to the degree of compensatory hypertrophy, and that in uncompensated lesions pressure is low. But there has been no satisfactory experimental demonstation of such a rule.

The following represents a series of cases of mitral insufficiency, only one of which (No. VIII) was associated with pronounced aortic lesion.

| CASE | SEX | AGE | PULSE | TONOMETER |
|---|---|---|---|---|
| I | Male | 17 | 92 | 102 mm. |
| II | Male | 40 | 80 | 128, 128 mm. |
| III | Male | 31 | 82 | 106, 103 mm. |
| IV | Female | 39 | 107 | 96, 100 mm. |
| V | Female | 26 | 106 | 110 mm. |
| VI | Female | 29 | 84 | 105, 108 mm. |
| VII | Male | 31 | 78 | 80 mm. |
| VIII | Male | 75 | 78 | 148, 138, 136 mm. |
| IX | Male | 19 | 72 | 105 mm. |
| X | Female | 40 | 68 | 99, 95 mm. |

In none of these cases were there severe symptoms of loss of compensation. Dyspnea of effort was present, and in most cases occasional attacks of palpitation. Marked acceleration of the pulse was exceptional rather than the rule. The pressures shown by the tonometer do not, except in cases No. II and VIII, depart far from the lower limits of normal. In Case VIII alone is anything like high pressure observed, and here there existed not alone mitral regurgitation but a double lesion of the aortic valve, and a heart whose apex was found in the sixth intercostal space. The remaining cases of the series did not show marked cardiac enlargement. These cases are presented merely as an illustration of what the tonometer shows in the milder grades of mitral regurgitation.

Long before the introduction of the tonometer, von Basch asserted that in cases of exceptionally good compensation pressure is sometimes low, while pronounced disturbance of compensation often coexists with persistent high tension; and this is easily explained by the many variable factors that modify arterial tension. Neither in valvular disease nor in cases of suspected degeneration of the cardiac muscle can strict inferences as to the cardiac condition be drawn from the amount of pressure found in the systemic vessels.

In connection with aortic insufficiency it should be noted that the pressure recorded by the tonometer is the maximum systolic pressure, which in this condition bears a peculiar relation to diastolic pressure, the difference between the maximum and minimum pressures being much greater than in other cardiac states.

An interesting case of aortic regurgitation was observed by the writer in Bellevue Hospital.

*Case AA.*—Mrs. McG., age thirty-five years. The patient made her appearance at the dispensary for the first time on July 28, suffering from acute dyspnea. She complained of persistent insomnia. Her heart was slightly enlarged, and a loud diastolic aortic murmur was heard. At this time the patient's pulse was 92 and regular; tonometer, 95, 98 mm. The patient's condition grew steadily worse, and on August 11 she consented to enter the hospital. At this time pulse frequency was 96; tonometer, 90, 92 mm. The patient was put to bed, receiving occasional doses of codeine for her insomnia and pain, and sodium salicylate* t. i. d. Her dyspnea had practically disappeared when the writer visited her again on August 22, and the tonometer now recorded 125, 124 mm.

Interesting as such a case is, its satisfactory interpretation is extremely difficult. Some of the influences at work were the change from household activity to rest in bed; the acquisition of a hopeful mental tone consequent upon the patient's steady improvement from the day of her entrance into the hospital; a modified diet; increase of sleep, which must be regarded as cause as well as effect of altered arterial tone, and medication.

*Blood-Presure in Nervous and Mental Disorders.*—Passing over to the domain of nervous diseases, it is to be noted, in the first place, that the vascular system of individuals of neurotic habit is much more easily impressed by mental causes than is the vascular system of normal persons. In the ordinary use of the tonometer it frequently happens that on account of the excitement due to the novelty of the experience, the pressure obtained on the first application of the instrument is somewhat higher than that obtained in succeeding applications. In excitable persons this initial rise of pressure may be 20 to 30 mm. On the other hand the excitement may result for the moment in marked cardiac depression. On one occasion an ignorant and nervous woman, who could not be convinced that the tonometer was harmless, fainted away when the pneumatic ring was applied to her finger.

It is said by Heim that the presence of a neurosis in children can often be determined by blood-pressure apparatus. He finds that in children who are constantly in a state of relative excitement and who suffer from headache, nausea, vomiting, dizziness and fainting spells without discoverable cause, blood-pressure is considerably above normal. In normal children, the tonometer records a pressure of from 75 to 95 mm., considerably less than in the adult. In neuropathic children one finds a pressure of 130 to 150 mm. The diagnostic value of this difference is as follows: In any individual case the tonometer cannot determine the character of the neurosis; but where children present themselves with the symptoms just described and no cause, such as anemia, refractive errors, etc., can be discovered, the tonometer will determine whether or not the case is neuropathic. If normal blood-pressure is found, the case does not belong to this class, and further search must be instituted for the cause of the symptoms. Heim's work on the vascular conditions characteristic of children is unique, and his results need to be confirmed by other investigators.

In curious contrast with the high tension which according to Heim is associated in sane but neurotic individuals with hyperexcitation of the nervous system, is the law laid down by Craig with reference to blood-pressure in various forms of insanity. Craig states that in insanity blood-pressure bears an inverse relation to the degree of excitement shown. In simple melancholia and in depressed forms of insanity generally, arterial tension is high; in agitated melancholia, where there is considerable motor excitement, it varies; while in acute mania it is below normal during excitement, rising to normal when the excitement has passed away.

In patients suffering from depression, a slight improvement was noticed by Craig after the administration of nitroglycerine. Of similar import is the testimony of Thorne, who in certain forms of mental disease endeavors to lower tension by keeping the bowels open, by giving artificial Nauheim baths and by the use of potassium iodide in small doses, as well as by the administration of sodium nitrite.

Kornfeld, whose work concerns itself especially with circulatory phenomena during sleep, found arterial tone to be above normal, during sleep, in epileptics and in the insane.

*Blood-Pressure During Fever.*—It seems impossible as yet to accept any of the pronounced views advocated by those who have endeavored to make clear the effect of febrile temperatures on arterial tension. The conclusions of experimenters seem to represent every possible shade of opinion. Thus we have Federn declaring that in scarlet fever a rise of blood-pressure may be accepted as a diagnostic sign, because in no other fever except malaria does a rise of temperature influence blood-pressure in the slightest degree. Zadek, who made a special study of intermittent fever, agrees with Federn as to the association, in this disease, of a rise of a temperature with a rise of pressure. In the typhoid cases of Alesois and Francois, febrile states otherwise similar in character failed to show any uniformity in blood-pressure. Lebedoff, who studied puerperal fever, thought that he established a direct relationship between temperature and pulse-frequency, on the one hand, and arterial tension on the other; but he weakens his case so far as temperature is concerned by admitting that after the disappearance of fever, blood-pressure continues high if pulse-frequency does not promptly abate. Von Basch accepts the theory that fever causes a rise of pressure by direct action of the temperature on the vascular centers. And finally Wetzel, who succeeded rather better than any one else in excluding conflicting elements, found that in the course of a brief, uncomplicated fever, the lowest pressure invariably corresponded with the highest temperature. Here, then is a pretty knot which the clinician must unravel before he can hope to apply to the treatment of febrile disorders his knowledge of the laws of arterial tension.

Wetzel's observations, to which allusion has just been made, were confined to febrile attacks of brief duration, free from complications and not capable of materially influencing the general strength of the patient. It is apparent that in long-continued fevers one has to do with such complications as a weak heart, lessened food supply and consequent lack of nutrition, changes in the circulating fluid resulting in exaltation or depression of the cardiac and vasomotor centers. Other complications that come into play are increase of capillary resistance, loss of vascular tone due to weakness of the muscular coat, constipation or diarrhea; and in special forms of fever we have pulmonary obstruction, persistent cough, muscular spasm, venous stasis, increased frequency of respiration, pain, insomnia, vomiting, profuse perspiration. Many of these conditions are present in brief fevers, but their influence is relatively unimportant.

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* Mariagliano has shown experimentally that salicylate of soda in single medicinal doses, is capable of raising blood-pressure from 5 to 10 mm., this effect lasting from eight to ten hours.

The fevers which Wetzel regards as furnishing the best opportunity for the study of the relations between temperature and blood-pressure are (uncomplicated cases of) acute gastritis, diphtheritis, acute rheumatism, typhoid, erysipelas. On account of the profuse sweats and the profound alteration in the blood, occurring in acute rheumatism it would be wiser to exclude this disease from the list. Influenza might be added were it not for the fact that in this disease cardiac weakness is usually out of proportion to the intensity of the fever. Indeed, there is no fever which can be regarded as "uncomplicated" from the standpoint of blood-pressure experiments; the best that can be done is to study cases in which the complicating factors are as few and as insignificant as possible.

An unfortunate circumstance is the practical impossibility of collecting any large series of cases in which blood-pressure can be carefully studied before as well as during and after fever. In rare circumstances this may be done; but as yet the literature of blood-pressure presents no record of this sort.

After having discussed at such length the obstacles which tend to confound us in this phase of the study of blood-pressure it is pleasant to be able to recognize at least one distinct service which blood-pressure apparatus has done. It has proved that arterial tension may be extremely low during the early stage of high fevers, when the pulse is full and bounding; relaxation of the arterial walls is no doubt the cause. A question which suggests itself is whether treatment having in view a better control of the circulatory apparatus during this period, might not prove of some benefit.

Finally a word in relation to the period of convalescence. The clinician must not be surprised to find abnormalities of pressure during this stage; blood-pressure is at this time as sensitive and changeable as the frequency of the pulse, and may rise or fall 20 or 30 mm. in the course of an hour without apparent cause.

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## THE CIRCULATION IN PUERPERAL ECLAMPSIA.

BY DOUGLAS H. STEWART, M.D.,
OF NEW YORK

As THE products of exhaustion retained in a muscle cause exhaustion, so kidney inefficiency will check elimination, by retaining waste. Nay, more, it may bring about reabsorption, of substances already eliminated but not yet expelled, by a sort of endosmosis acting on the bowel contents. For instance, Epsom salts by enema or mouth increase the fluid in the intestines and purge; by venous injection they reverse matters, because being endosmotic they draw toward themselves. In much the same manner some substance in eclamptic blood favors reabsorption to such a degree that Stercoremia Gravidarum appears an exact term to designate a blood poisoned by its own excretions and then flooding the nerve centers until they are goaded into convulsive activity. Before this point is reached the circulation has almost reversed the conditions necessary for the proper tension in the vessels concerned in lung-exchange, sweating and the excretions of the intestinal mucous membranes. The whole arterial system presents a picture of overstimulation and of force and resistance to force. If the blood quantity is increased, quality is lowered and poisons are augmented beyond any protective destruction which the liver affords against the toxic conditions within the portal vein of even the healthiest animal. Plethero-toxemia would about describe the condition.

Heart action is started and maintained by blood in the auricle, ventricle and coronary arteries. Not only are ample stimulating properties furnished for the mechanical portion of the circulation, but the nerve centers, engineer and governor as they are, depend for existence on the contents of the system they control. Every one who has seen the ligation of the coronary arteries will recall the prompt arrest of the beat. Conversely the action of a heart against arterial resistance forces more blood through the coronary arteries and increases heart power. In eclampsia the left ventricle is hypertrophied and the law of rapidity inversely as power is violated. We might have dilatation were it not for the hypertrophica gravidarum which makes the heart wall of the pregnant woman so thick and strong. The pressure on the arterial side is more than ten to one on the venous. The veins are so underfilled that contractions of pulmonary and vena cava aid the blood into the auricle over the area of negative tension, yet we are told to bleed from the vein, knowing of the old experiment, the blood of one thirty-pound dog into the veins of another thirty-pound dog = pressure-rise, 0.

The vasomotor center will restore and maintain the normal despite any local fall of tension and you simply cannot reduce blood pressure short of dangerous hemorrhage and collapse. This pressure falls after venesection because poison is withdrawn and not because blood is drawn. To diminish arterial tension one would bleed from an artery not from a vein.

In studying the actual poison ammonia and alkaloids make our working basis. Ammonia stimulates the accelerator nerves and ptomaines are near relatives to vegetable alkaloids (Brieger says identical). Strychnine has a first cousin in the eclamptic group and eclampsia has a strong clinical resemblance to an overdose of nux vomica. Even from this standpoint removal is better than antagonism, and, theoretically, a daily loss of four ounces of blood is worth the whole list of cardiac depressants from aconite, bromide and chloral down to V, which stands for veratrum. In venesection consider the age of the patient. The pulse will soften as you diminish heart irritation and heart-effort will be relieved as you extract poison. Less blood in the coronary arteries will weaken heart stimulus, arterial resistance will fall with decreasing dilatation and tension and friction in the arterioles, will abate as expansion lessens.

Nicholson seems to find a digitalis-like substance in the blood; and recommends thyroid extract as an antidote. As to the question of digitaline or strychnine, both substances agree in certain symptoms of their poisoning. But, it seems to me, that the great heart-stimulant is venous blood. The normal renal vein contains scarlet blood which was dirty in the artery, has been cleansed in the kidney and is now the purest in the body. Tracing this into the vena cava we find venous blood being diluted by arterial and thus, when this mixed stream reaches the heart, its stimulating power is mitigated.

If the kidney is not excreting properly the waste products already in the vena cava are fortified by those in the renal stream, broadly speaking the caval blood is made thoroughly venous and consequently the heart is overimpelled.

Plants may retain and store up their excretions in a harmless or even useful manner, but the animal that ceases to excrete is apt to feed plants. The plant circulation may throw waste to one side and incorporate it in its body, but the animal circulation must cleanse itself by expulsion of waste through eliminating organs.

Finally, as the thorax aspirates the venous so it drives the arterial flow and as the arterial circulation is already overfilled, in puerperal eclampsia, calm respiration is decidedly desirable.

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## SOME INTERESTING PHENOMENA OF SPECIFIC IMMUNE SERA.[*]

BY ARTHUR P. HITCHENS, M.D.,
OF GLENOLDEN, PA.

THE difficulty which has always been experienced in finding an efficient vaccine and a curative serum for such diseases as typhoid fever, dysentery, bubonic plague and cholera has stimulated work along the line of immune sera; work which has brought to light many interesting and valuable facts. Vaccines have been made for these diseases by the employment of killed cultures of the causative bacteria. The results of such treatment, so far as prevention is concerned, have been encouraging, but the reaction following injection is often rather severe. For this reason vaccination will be used only during epidemics unless a body is produced which, while lessening the severity of the reaction, does not impair the value of the treatment.

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[*] Read at a meeting of the Northwestern Medical Society, Philadelphia, Pa. November 4, 1902.

Since this class of bacteria produces in culture media no considerable amount of soluble toxin, the actual bodily presence of the bacterium is necessary for the production of its characteristic pathologic effects. In diphtheria, tetanus and botulismus, which are toxic diseases, the organisms grow locally and produce soluble poisons, and immunity to these diseases results from the presence within the body of a substance which will neutralize these poisons—antitoxins. In such diseases as typhoid fever, pneumonia and conditions caused by the pyogenic cocci, we are dealing with the living organisms, therefore, the establishment of immunity against such a disease involves the destruction of the bacteria.

The two most prominent theories which have been put forward to explain this form of immunity are: the phagocytic theory of Metschnikoff and the alexin theory of Buchner. According to the theory of Metschnikoff, when bacteria gain entrance to the body, they are attracted by chemiotaxis to the phagocytes englobed and digested. It has been shown by this school that in a disease to which the animal possesses no immunity there is a negative chemiotaxis between leucocyte and bacterium; a repulsion which lessens as susceptibility decreases and is finally replaced by positive chemiotaxis. The higher the grade of immunity obtained, the greater the degree of attraction and the more marked and active the phagocytic process. Under such a conception the development of sera capable of transferring immunity to other animals has always been a source of great controversy. According to the theory of Buchner, in the production of immunity there are elaborated by the cells of the body substances known as alexins; these are held in solution by the body fluids and have the power of dissolving the bacteria. Both these theories leave much to be explained.

Pfeiffer's reaction[1] may be considered the starting point of those interesting discoveries in the recent work on immunity from infection. This reaction is as follows: a guinea pig is rendered immune to cholera by the intraperitoneal injection of gradually increasing doses of the attenuated spirillum; after a few days of this treatment the live germ may be tolerated and is administered in the same manner. If an animal thus immunized is given living cholera spirilla intraperitoneally it will be found by a microscopic examination of the peritoneal fluid within a few minutes that a degeneration is commencing among the spirilla. A drop or two withdrawn at intervals of every few minutes shows a progressive bacteriolysis; the highly motile bacteria cease movement, lose shape, swell, become granular and finally disintegrate. All this occurs within 20 minutes. Pfeiffer's reaction is specific, the body fluids of an animal immunized to cholera have no effect on other spirilla. The reaction may be also observed outside the body by using some of the fresh serum of an immunized animal. Only fresh serum must be used, since serum kept, no matter under what conditions, rapidly loses its bacteriolytic effect, and the power is entirely destroyed in serum heated to about 60° C. Pfeiffer noticed that if the heated immune serum along with cholera vibrios was introduced into a fresh, untreated guinea pig's peritoneum the usual reaction took place, and from this deduced that the immunizing material was not altogether destroyed by heat but that in some way it affected the animal's organization and helped it to dissolve the bacteria. Bordet[2] went farther and found that the heated immune serum could be reactivated by the addition of a little fresh blood serum from an immunized guinea pig.

The researches of Bordet have been of the greatest value in throwing light on some of the intricate problems of immunity against infection. These consisted in the study of the phenomenon which occurs when the blood corpuscles of an animal of a certain species (the rabbit, for instance), are injected into an animal of another species (guinea pig), after the manner of an immunizing experiment. The serum of the guinea pig will then be found to possess the power of dissolving the corpuscles of the rabbit—either when injected into the latter or *in vitro*. It was found, as in Pfeiffer's reaction, that this hemolytic serum lost its power of dissolving the corpuscles if heated for one hour to 55° C., this power returned on the addition to the inactive heated serum, of serum from a guinea pig which was fresh and untreated.

These results with some work done by himself and Morgenroth, led Ehrlich to conclude that two substances distinct in character are concerned in this form of immunity; one contained in fresh normal serum and destroyed by heat (thermolabile)—the complement; the other depending on immunization of the animal and more resistant (thermostable)—the immune body. Ehrlich[3] has explained the dissolution of the corpuscles by these two substances, by extending somewhat his lateral chain theory. According to this each of the substances possesses bonds of union or affinity which are called haptophore (*ἅπτω*, touch; *Φέρω*, carry) groups, the immune body having two groups, one linking itself to a receptor or bond of union in the body which is being acted upon, in this case the red blood corpuscle; the other joined to the corresponding in the complement.

The names which these two substances have received from different sources are many and various. The immune body is also called the amboceptor, philocytase, sensitizer, preparative, fixative, copula, intermediary body, desmon and *"la substance sensibilisatrice."* To the analogous substances sometimes occurring in normal sera, Ehrlich has given the name *"Zwischenkörper"*—

generally translated "go-between." The complement is also known as the alexin or cytase.

In an article by Richardson[4] the union and relations between complement, immune body and corpuscle or bacillus as the case may be, is represented in a very diagrammatic manner, as pictured by Ehrlich, to aid in a comprehension of this difficult subject.

Richardson's work seems to denote that the mixture must be made in a certain way; using the serum from patients suffering with typhoid fever he found the ordinary Widal reaction to be present, but there was little or no tendency to destruction of the organisms. When, however, some normal serum was added to the mixture, the clumps of bacilli were found to be transformed within an hour or two into finely granular masses. If the order of mixing was bacillus + typhoid patient's serum + normal serum, bacteriolysis took place rapidly, but if the two sera were mixed previous to adding the organisms, not only did no digestion take place, but the bacilli grew luxuriantly in the mixture. In other words, at the height of the disease, in the few cases investigated, there was not only no active complement in the blood of the patient, but the serum contained something which united with complement from without—probably a neutralization by or union with the immune body. Added, however, in the bacillus + typhoid + normal order, the bacillus was united by its receptor to the immune body in the typhoid serum, allowing the complement to act as the alexin. The small number of cases reported make this observation only suggestive. Longcope[5] found, however, that the blood of some typhoid fever patients showed a dimunition in the specific complements for the typhoid bacillus. Normal individuals show considerable variation in the power of their bacteriolytic complements, and it appears that the specific complement content has much to do with the individual's resistance to a disease.

Researches on the subject of cytolysins justify the deduction that the bodily capacities at work in hemolysis are identical with those concerned in bacteriolysis and bactericidal action, but while the processes are the same, it does not follow that the substances which cause hemolysis are identical with those which give rise to bacteriolysis.

In their work on the cytolysins Metchnikoff[6] and others have obtained bodies capable of dissolving the variety of cell injected and specific for that cell. If emulsions of the testicle or the spermatic fluid be injected into the peritoneal cavity of an animal such as the guinea pig, after the method of immunization, the serum of the animal develops the capacity of immobilizing fresh spermatozoa. Similar experiments have been conducted with leucocytes. The "spermotoxin" injected into a female of the species from which the spermatic fluid was obtained will render her sterile. Emulsions of bone marrow, and mesenteric glands have been injected into animals and sera have been obtained which possessed the power of dissolving white blood corpuscles, both *in vivo* and *in vitro*. A serum produced by the injection of spleen emulsion has a solvent action on the mononuclear and also on the polymorphonuclear leucocytes, while a serum produced by the injection of bone marrow has a special action on the latter only. Von Dungern[7] has been able to produce a serum which will immobilize the cilia of the tracheal columnar epithelium. Sera produced by the injection of liver tissue produce conditions allied to what occurs in phosphorus poisoning. Similar poisonous sera have been obtained by the injection of kidney cells and cells from the central nervous system. The nephrotoxic serum has also been made by ligating one of the ureters, the consequent atrophy and absorption of renal tissue acting as though received from another animal. All these sera are rendered inactive by heating them and may be reactivated by the addition of some fresh normal serum.

Besides the bacteriolytic and cytolytic action of immune sera, there are other effects produced which are none the less interesting, and one of the most useful in practical medicine is the agglutination or clumping reaction. This phenomenon has been so widely used and has been of such great value in the early diagnosis of typhoid fever that anything said concerning its technique would be waste of time. The Gruber-Durham, or so-called Widal reaction, however, is not limited in usefulness to typhoid fever, it is of positive value in many other infectious diseases. It is an invaluable aid in the determination of certain bacterial species, and especially is this the case in the recognition of the closely allied para-typhoid and paracolon groups. Recently much interest has been centered on the para-typhoid infections and the only way of positively diagnosing them is by the agglutinin reaction. In medical jurisprudence the specific serum reaction is destined to be of great value in cases where there is a question as to the cause of death. The agglutinins will show whether or not an infectious disease was the cause.

The precipitins may be of still more value in forensic medicine. An animal (*e.g.*, the rabbit), treated with the defibrinated blood of the guinea pig after the manner of an immunization will have developed in its serum the power of clouding and precipitating guinea pig blood from its solutions or suspensions. Human blood injected into an animal will cause the development within that animal of a "human" precipitin, and with the exception of the anthropoid apes, the gorilla, chimpanzee and orang-outang, the reaction is specific for the blood of man. In few cases, in this country, will there be any trouble in excluding the blood of these animals on other grounds. Positive results have been obtained with blood which had been dried for a long time on such things as plaster, pieces of wood, muslin, hair, earth, glass, etc. When a diagnosis is to be made the spot of blood is soaked out in water; a positive reaction is obtained in very high dilutions. Serous effusions and albuminous urine will produce specific anti-sera like the blood. All albuminous fluids which have been tried thus far have yielded positive and very gratifying results, the reaction for albumin is the most delicate known. Uhlenhuth[8] obtained an albumin reaction with egg white in dilutions of 1-100,000, while the highest dilution with which he could get a positive test with the ordinary chemical reagents was 1-1,000. This will be specially interesting to those interested in clinical medicine, not only because it will detect very minute quantities of albumin in the urine but it will show the kind of albumin present. A serum containing "human" precipitin will react only with human serum, albumin added from other sources either by insane patients or by others with the idea of deceiving the physician, will cause absolutely no reaction. Human milk injected into a rabbit will produce a precepitin which will coagulate human milk but will have no effect on either goat's or cow's milk. It is almost an axiom that the babes of a certain animal species thrive best on milk from a mother of the same species. A series of experiments performed by Pope and Sollman[9] to determine whether specificity of serum reaction had any bearing on this resulted negatively. Milk fed to the animal *per oram* had no effect in producing precipitins.

Ainsley Walker in "Immunization Against Immune Serum" brings out a point which has a most important bearing on certain uses which might be made of the immune sera. There were two series of experiments made, the first concerning the bacillus itself. He succeeded in making the bacillus of typhoid fever grow in its own immune serum and found that the organism thus immunized to its immune serum was increased in virulence. In the other series animals were given increasing doses of typhoid serum. Each animal received five injections. About two weeks after the last injection of serum they were given measured doses of the live typhoid germ. Compared with untreated animals it was found that although susceptibility to the organism was not increased, the serum in ordinary doses had lost its protective power. Applying this fact to human treatment we will suppose a case, a man living in a plague infected district wishes to keep himself immune to the disease and seeks to do this by taking at intervals prophylactic doses of the Yersin serum. After a time on account of the *anti*-immune body he has stored up, each injection will become immediately neutralized and consequently valueless. The fear, entertained by some, that repeated injections would also destroy the natural immunity of the subject was proved to be unfounded. For although anti-immune body is stored up it is *singular* in its neutralizing power and not *reciprocal*. Welch[11] states that this reaction does not occur with antitoxins—no "anti-antitoxin" is formed. This latter fact is borne out by ample clinical evidence. Prophylactic doses of tetanus antitoxin are administered regularly to horses under treatment for the production of various serum preparations with the result that tetanus is never seen in horses thus treated.

Since the promulgation of Buchner's alexin theory and Metschnikoff's phagocytic theory, a continual controversy has waged between the German and French schools, each school claiming greater accuracy for the theory of its respective master. Metschnikoff, at present, though still holding that the leucocytes are the active agents in producing the immune body and complement, allows that these bodies are contained in the body fluids. The advocates of the theory of Buchner as modified by Ehrlich and his associates, while contending that other body cells are concerned in the elaboration of alexins, admits that the leucocytes play a prominent part in this work. Whatever may be the outcome of all this intricate and involved theorizing, from the fact that these concessions have been made, it would appear that we are approaching an accurate knowledge of the phenomena concerned in immunity. And the hope may be entertained without fear of being thought too sanguine that before long we shall have curative sera for typhoid fever and its congeners, of as much value as is antitoxin in the prevention and treatment of diphtheria.

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# MEDICAL PROGRESS.

## SURGERY.

**Esophagotome.**—An instrument for cutting strictures of the esophagus, founded upon the Abbe principle of chafing through the distended stricture with a string which is pulled back and forth, is described by T. Dunham (Ann. of Surg., March, 1903). It is constructed so that the operation is performed entirely through the mouth, without opening the stomach, as is the case with the Abbe method. The instrument consists of a whalebone staff with an olive metal tip secured fast to one end, and pierced by two tunnels. One is a curved tunnel convex toward the end of the instrument, with its two ends opening opposite each other, well forward of the greatest diameter of the olive. This curved tunnel is made by two tunnels which meet at an angle. The crest between them is smoothed down by pulling a string covered with wet emery powder. Unless this angle is thus smoothed, the string of the operation is quickly chafed through itself. The second tunnel begins at the base of the olive, and is a guide tunnel for accommodating a guide previously passed through the stricture. To shield the soft parts of the pharynx from scraping by the string while cutting, a guard is made to hold the string close to the whalebone, consisting, briefly, of a handle, to which are soldered two wires, which are run along the whalebone by means of which the guard may slide along the staff. The wires also have two sets of lateral eyes in which the cutting strings may play to and fro. These strings are thus held away from the soft parts. The method of using this instrument is as follows:

An olive a little larger than the stricture is secured to the whalebone. The two ends of the string which pass through its tunnel are threaded through the eyes of the guard. As a preliminary, the string must be well soaked and free of kinks. The patient's head is hyperextended, so that the esophagus and pharynx are as nearly as possible in a straight line. The guide is then passed through the stricture, without using any force. Then the wire of the guide bougie is passed through the guide tunnel of the olive, which itself is slipped along until its tip comes into contact with the bougie portion of the guide bougie. The two are then passed down to the stricture and the guard arranged to protect the epiglottis. Moderate pressure is now put upon the staff and the string is worked until the stricture is cut through.

**The Taste Fibers.**—In order to determine the relation of the taste fibers to the trigeminal nerve, a series of practical experiments were made on cases in which the Gasserian ganglion had been extirpated, by H. CUSHING (Johns Hop. Hosp. Bull., April, 1903). The uniform results in thirteen cases led the author to the following conclusions: That the perception of taste is unaffected on the posterior portion of the tongue and never permanently or completely lost on the anterior two-thirds after removal of the Gasserian ganglion. A temporary abolition or lessening of the acuity of taste may be found to exist over the anterior and an esthetic portion of the tongue for some days after the operation. This temporary loss of function may possibly be occasioned by some interference with chorda transmission brought about by a mechanical or toxic disturbance due to degeneration of the lingual nerve. A lesion of the trigeminal nerve may be associated with disturbance of taste over the chorda territory without the necessary inference that the nerve is a path for gustatory impulses. The trigeminal nerve in all probability does not convey taste fibers to the brain either from the anterior or the posterior portion of the tongue.

**Treatment of Traumatic Gangrene of the Extremities.**—The many unsuccessful results following amputation for spreading gangrene of the extremities has led VAN BUREN KNOTT (Jour. Am. Med. Ass'n, April 11, 1903) to propose a new method of treatment for this condition. He believes that the unsatisfactory outcome in many cases is due to two factors, the dissection of the flaps and the introduction of sutures. The dissection of the soft parts into suitable flaps necessarily interferes with the blood supply of tissues, the vitality of which is already seriously in question. The introduction of sutures also causes retention within the wound of infectious elements which may have ascended to a higher level than was believed probable, and further interferes with the flap nutrition by the tension which, no matter how carefully the sutures may be placed, cannot be avoided. The author's method is as follows: First estimate as carefully as possible the line between the diseased and healthy soft parts. Then having thoroughly cleaned the entire area, wrap the gangrenous part in a sterile towel up to the line selected, and at this point make a circular amputation, cutting through the soft parts and bone at the same level. Ligation must be carefully done without including any of the perivascular tissue in the bite of either forceps or ligature. The wound is left open and a moist dressing of gauze saturated in salt solution applied which is changed several times daily. After seven to ten days, if the wound is perfectly clean and the condition of the patient favorable, the classical circular amputation may be made by dissecting up the flap already outlined and sawing the bone at the proper level. The advantages of the method are, a minimum of shock while removing the gangrenous tissues, the possibility of making the amputation higher up than by the old method, because soft tissues whose vascular connections are undisturbed are less apt to slough, the freest possible drainage is provided for a sufficiently long time, if the disease stops at the line first chosen no unnecessary sacrifice of tissue has been made, as the flaps have been defined at the lowest limit of safety, and finally patients too weak and prostrated by sepsis to withstand a typical amputation may endure this much shorter procedure and be built up in the interval before the second operation is necessary.

**Detection of Renal Calculi by X-rays.**—So great are the difficulties in locating renal calculi by the X-rays that the greatest care and accuracy must be observed in order that the results may be trustworthy. H. P. MOSELEY (N. Y. Med. Jour., March 7, 1903) says that fluoroscopic examination is absolutely unsatisfactory for both renal and vesical calculi because the portion of the body under consideration is the most difficult we have to examine. It does not allow sufficient rays to pass through it to enable differentiation by one retina. The object is also so small frequently that it cannot be brought near enough to the screen to cast a distinct shadow. Furthermore, the necessity of remaining at least ten minutes in an absolutely dark room before making any satisfactory fluoroscopic examination is mentioned to show what careful preparation of the observer's eye is necessary. The only positive means of detecting the presence of renal or vesical calculi is by radiographic examination and even here negatives are satisfactory only when they show good differentiation between the various tissues, the outlines of the vertebræ, the transverse and spinous processes, the last ribs and the psoas, iliacus and quadratus lumborum muscles. The plate should include the lower ribs, both kidneys and the length of the ureters. An 11x24 plate is usually sufficiently large. The target of the tube is placed over the umbilicus from 18 to 24 inches from the plate on which the patient lies flat on his back. Two radiographs should be made and compared before any opinion is given. The patient should have the gastro-intestinal tract prepared almost as carefully as for a celiotomy for various substances in the intestines may give rise to the difficulties in the interpretation. Other sources of error may be mentioned as defects in the plates, air bubbles on the plates and especially air in the gut may cause shadows which may be mistaken for calculi. Pure uric acid calculi give very poor shadows and can seldom be recognized. Calculi of oxalatis phosphates and mixed urinary salts usually give good shadows. The present status of the value of this mode of examination for renal calculi can perhaps be best given in the words of Dr. Andrew J. McCosh who says "as corroborative evidence a radiograph showing a renal calculus is perhaps of more importance than any one symptom. If an expert observer sees in these different plates a kidney stone I should regard the evidence as conclusive, provided other symptoms are present." Dr. F. H. Williams writes: "The absence of indications of a calculus in the negative does not exclude the presence of a renal calculus. On the other hand, when all suitable precautions have been taken indications of calculi on satisfactory negatives afford good evidence of their presence when taken in connection with the clinical history."

**Transplantation of Omentum.**—Omental transplantation as a reinforcement to intestinal suture is a recognized operation. E. J. SENN (Jour. Am. Med. Ass'n, April 18, 1903) suggests the possibility of using it in covering intestinal defects. This would include duodenal ulcer, intestinal tuberculosis, gangrenous cecum, also where suturing would cause too great a narrowing of the intestinal lumen, or where the condition of the patient or extensive adhesions would not permit an enterectomy. The author reports one case in which the procedure was successfully resorted to, a patient with a gangrenous appendix, which was inadvertently torn away from its cecal attachment during the act of ligation. A portion of the omentum was stitched over the opening with interrupted catgut sutures. No fistula resulted and the patient made a perfect recovery. A series of experiments were also made on dogs, but in all cases death resulted from perforative peritonitis, probably because the omentum of the dog, being thinner than that of man, nor as vascular, is not adapted for plastic work. The value of transplantation over defects in the stomach has been established by other observers, but with reference to intestine, the procedure is still in the experimental stage. The author thinks the cecum is the most favorable part of the intestinal tract for the operation on account of its slight mobility. The peristaltic movements in the intestines place considerable tension on the transplanted omentum and a preliminary fixation should be done of the intestinal segment to the abdominal wall. Abundant drainage should be provided far down to the seat of suture, and the general peritoneal cavity thoroughly walled off.

**Renal Decapsulation for Chronic Bright's Disease.**—The possible improvement of symptoms in this disease by decapsulation of the kidney was not thought of till such results were found to follow in simple cases of nephrorraphy upon kidneys which presented mild cases of nephritis. The rationale of the operation seems to depend upon the formation of new blood vessels in the new connective tissue capsule which forms to hold the kidney in place. Adhesions rapidly follow the decapsulation of the organ and new blood channels are formed which compensate for the diminished blood supply through the normal channels. G. M. Edebohls (Med. Rev., March 28, 1903) was the first to undertake the operation with the deliberate purpose of curing chronic Bright's disease. His total experience in such operations up to the end of 1902 embraces 51 cases, the first one having been operated upon in 1898. With one exception they were all adults. The diagnoses were made upon the symptoms, signs and urinary examinations and in nearly every case were confirmed by several examinations. In 47 cases operations were performed upon both kidneys, in four it was performed upon one only. Seven patients died within seventeen days after the operation. Seven patients died at periods after the operation varying from two months to eight years. Two patients do not show satisfactory improvement, twenty-two patients are in various stages of satisfactory improvement and progress toward health at periods varying between two months and fifteen months after operation. The urine of several of these is at present free from albumin and casts. One patient, after a cure of four years, again has chronic Bright's disease. Nine patients were cured and remain cured at periods varying from one year and nine months to ten years, the average duration of cure being four years.

## EYE, EAR, NOSE, AND THROAT.

**Retinal Hemorrhages in Fracture of the Skull.**—The diagnostic value of this symptom in the fractures of the base of the skull, is commented on by R. A. Fleming (Edinb. Med. Jour., April, 1903). He has made numerous post-mortem examinations and divides his cases into three groups, the first including cases in which the subarachnoid hemorrhage was mostly unilateral, and retinal hemorrhage was present but confined to the eye on the same side. In the second the hemorrhage was marked on both sides and the retinal hemorrhage likewise. The third includes cases in which there was no retinal hemorrhage visible after death, and where there was little subarachnoid effusion, or an effusion of slow onset. The conclusions suggested by these cases is that a subarachnoid hemorrhage, if sufficiently rapid in its development, will cause retinal hemorrhage, and that if the effusion is unilateral, the hemorrhage will be confined mostly to the affected side. Although it is difficult to affirm that in most cases such recognition will afford an indication for treatment, it does determine the side of the subarachnoid effusion, and where the question of operative intereference is under consideration, this information may be helpful in choosing the best site for trephining.

**The Bandage in Ophthalmology.**—The indications for the application of bandages to the eyes are taken up by De Ridder (Jour. Méd. de Bruxelles, March 26, 1903) who classifies such bandages as protective and compressive. Indications for the former are given as follows: (1) In recent ulcers of the cornea, to gently close the eyelids, thus preventing friction from winking, and protecting the eye from dust, which, in the normal condition is washed from the smooth corneal surface by the tears, but in the presence of corneal ulcer is prone to settle in its base; (2) in superficial wounds of the cornea from foreign bodies, as a protection against infection; (3) in deep corneal wounds; (4) in grave forms of conjunctivitis, when one eye is affected, to prevent infection of the healthy eye; (5) after operations for cataract, iridectomy, etc. The compressive bandage is indicated: (*a*) In corneal ulcers in which the superficial layers have been destroyed, in order to aid the posterior layers in resisting intra-ocular pressure; (*b*) in mild forms of lagophthalmos a compressive bandage applied at night suffices to protect the eyeball from exposure during sleep. During the day, the sensation of dryness in the cornea will of itself provoke more frequent closure of the eyelids; (*c*) in neuroparalytic keratitis, in which condition, through paralysis of the trigeminal nerve the cornea partially loses its sensibility, and consequently the reflex closure of the eyelids to protect the cornea against external irritation, does not occur; (*d*) in hernia of the iris; (*e*) in corneal staphyloma, to obtain a flat, resistant cicatrix, the bandage should be worn a prolonged time; (*f*) in keratectasia; (*g*) in edema of the conjunctiva and eyelids; (*h*) in subconjunctival palpebral emphysema.

## THERAPEUTICS.

**Massage of the Prostate in Gonorrhea.**—A method of treatment which effected a clinical cure in a number of chronic gonorrheal cases is described by P. Adolpho (Gazz. Osped., March 22, 1903), though bacteriological confirmation of the cure is lacking. He proceeds as follows: The patient is placed in a supine position and 10 c.c. of an antiseptic, astringent fluid is injected into the urethra by means of an ordinary glass syringe. A solution of resorcin or zinc sulphate is generally used, and to this is added a small quantity of laudanum to lessen the discomfort of the application. The patient is then directed to retain the solution by closing the external meatus between the index finger and thumb. The physician next introduces his right index finger into the rectum as far as the prostate and gently massages first the lateral lobes of the gland and then the middle, always stroking downward toward the rectum. Massage is continued for five minutes; at the end of which time the fluid is allowed to flow slowly from the urethra. Treatment is repeated daily for from twelve to twenty-five days, according to the duration of the disease. By this method the nutrition of the parts is improved, the atonic condition of the tissue is overcome and through the massage, the fluid thoroughly bathes all parts of the urethra. The injected liquid is said to return clear after the first treatment, but in subsequent treatments it is turbid and brings away with it fragments of desquamated epithelium; but as the cure progresses, it again returns clear. No ill-effects have been seen in any of the cases so treated and an apparent cure has been effected in all.

**Glycerol of Iodine.**—Attention is called to the value of this remedy in various diseases and to its superiority when compared with the ordinary tincture of iodine, by T. W. Williams (Am. Med., April 11, 1903). Glycerin is a perfect solvent of iodine and less volatile, and the preparation can therefore not be used ad libitum as we would the tincture. It leaves no stain on the skin and produces only a slight local irritation. The preparation can be easily made as follows: A pint flask such as is used for making chlorine gas, is connected by means of a glass tube with a wide-mouthed bottle. An ounce of iodine is placed in the flask, together with twelve ounces of alcohol. The flask is set in a sand bath over some form of heater and the wide-mouthed bottle placed in ice or very cold water. A gentle heat is used until the alcohol and as much of the iodine as it will carry over with it, has been distilled in the wide-mouthed bottle. All impurities in the iodine will thus be left in the flask and to this distillate should be added four ounces of glycerin, commercially pure. The author has used the preparation with good results in chronic pleurisy, adenitis, chronic bronchitis, and goiter.

**The Scopolamin-Morphine Narcosis.**—This method, since its introduction in 1900, has called for a number of varying opinions. Further observations on its use have lately been published by its author, Scheiderlein (Münch. med. Woch., March 3, 1903). He has found that anesthesia did not come on with either one of the ingredients, but could be readily induced when the two were used in combination, even if only one-half of the former dose was employed.

As with all anesthetics, certain precautions must be observed during recovery. The disadvantages are (1) the time which is lost in determining the proper dose for each individual, and (2) the respiration must be carefully watched. The advantages are, safety after careful preliminary trial, no special anesthetist is needed, the psychical shock may with care be entirely eliminated. The author thinks that the failures of others have been due to incomplete preliminary trials, to the use of too large doses, and to not allowing sufficient time for the narcosis to develop. An hour and a quarter to an hour and a half should be permitted to elapse between the first injection and the incision. He has also made experiments with very dilute solutions given as a transfusion, and has administered the drugs by mouth, but is not prepared to publish his conclusions.

**Silver Sulpho-ichthyolate.**—Only a few scientific studies have been made upon the action of this drug commonly known as ichthargan. H. C. Wood, Jr. (N. Y. Med. Jour., April 11, 1903) has made various experiments with the drug and says that it is an astringent but much less irritant than the nitrate. When applied to the mucous membrane of the mouth it produces a styptic, metallic and slightly bitter taste but no pain and no visible sign of inflammation. It is precipitated by the ordinary reagents for silver and, what is of particular importance, by the salts of hydrochloric acid. It is impossible for it to preserve its integrity in the stomach and undoubtedly is broken up into silver chloride and ichthyol. When injected into veins it is impossible to say just what its action is, but it is highly improbable that it can maintain its integrity, for it is so rapidly precipitated by the alkalies, the chlorides and the albumins of the body. When injected hypodermically it is absorbed with the greatest slowness and it is therefore unlikely to exercise any poisonous effect. So far as its physiological action is concerned it has been found by experiment upon the frog that it causes motor weakness and finally complete paralysis which is chiefly central in origin but the spinal centers are also somewhat depressed. Its action seems to be precisely similar qualitatively to that of the other silver salts, but it has the advantage over the nitrate in that it is locally less irritant and is decidely less poisonous.

**Treatment of Migrane.**—Migraine is probably the most difficult malady which the practitioner has to treat. It often causes profound remote effects upon the sufferer and inasmuch as its pathology is so little known, we often find ourselves helpless in its presence. It is popularly known as "sick headache" or "bilious attack." Before the age of ten it is rarely observed, and after thirty-five it is equally infrequent. Climate has a marked influence—the colder latitudes with damp east winds being potent causative factors. The heritage from gouty and rheumatic families as well as true epilepsy are also of etiological importance. Indeed it is highly probable that some cases of pronounced and obstinate migraine are but masked evidences of true epilepsy. In order to attack the migraine satisfactorily, every effort must be made to find out its etiology. Knowing its etiology and knowing its pathology are two separate and distinct things. It may be an east wind; it may be diathesis; it may be constipation; it may be mental worry. General treatment therefore is of paramount importance. For the mitigation of the acute attack, the first essential is absolute rest in a darkened room. Many patients do better in an armchair than upon a couch. Heat should be applied to the feet, mustard to the back of the neck and the head should be wrapped in a warm shawl. Tea or coffee usually aggravate the condition. This is practically all that can be done in a general way. If the patient is gouty, colchicum should be given, if rheumatic, the salicylates or asperin, where overworked, sodium bromide, grains 15 every three hours often helps. When produced by eye-strain tincture of hyoscyamus and belladonna in conjunction with bromide often help. If the patient has a specially tender tooth, it should either be extracted or the part actively carbolized. The urine should invariably be examined. If the attack comes on during the menstrual period, a sitzbath combined with the following is desirable:

| | | |
|---|---|---|
| ℞ | Spt. chloroformi | ʒij |
| | Spt. ammon. aromat | ʒij |
| | Tr. card. co. | ʒij |
| | Liq. ammon. acet. ad | ℥iij |

Sig. ʒij secunda hora ex. aq.

Sometimes it is impossible, however, to treat the attack on etiological grounds, and one is obliged to use symptomatic treatment. This introduces the vast and ever-growing group of analgesics of which phenacetine is by far the most popular. In the opinion of the author, James Burnett (Med. Press and Circ., April 8, 1903), citrophen is the most reliable analgesic for migraine. In the presence of nausea and vomiting before more complicated prescriptions are used, it is often surprising how much relief can be had from the following simple mixture:

| | | |
|---|---|---|
| ℞ | Tr. zingiberis | ʒj |
| | Tr. capsici | ♏36 |
| | Syr. zingiberis | ʒiv |
| | Aq. menth. pip. ad | ℥iij |

Sig. ʒij omni hora ex. aq.

Under no conditions, however, should citrophen be used before every possible etiological factor has been tried and its remedy found wanting.

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## SATURDAY, MAY 23, 1903.

### A NEW DISEASE.

WHEN Graves first described in England the symptom complex that by the irony of fate and Chauvinism does not bear his name as universally as it should, or when Addison selected out of a series of anemia patients the original group of cases which we now know as pernicious anemia, or first described that other symptom complex with its definite pathological basis that we know as Addison's disease, their discoveries attracted little attention from the practitioners of England generally because the diseases described were thought to be very rare and therefore unimportant. Now every practitioner knows them well and would deem it almost a disgrace to miss their diagnosis in typically developed cases.

At the present time the same feeling may be the first impression with regard to the new clinical entity described at the Sixth Triennial Session of the Congress of American Physicians and Surgeons last week in Washington by Professor Osler (see MEDICAL NEWS, page 952), and for which we feel it proper to suggest, much as we deprecate in general the naming of diseases by discoverers' names, the designation Osler's disease.

There is no doubt that this new affection will prove to be much more frequent than may be thought just now. Even at the moment of its first description as a definite independent pathological entity authoritative clinicians from many and distant parts of the country were at once ready to declare that they had seen similar cases although not appreciating the possibility of being in the presence of a hitherto unrecognized symptom complex.

The characteristics of the new affection make it comparatively easy to recognize. Chronic cyanosis is easy to observe and in fact cannot readily escape notice. When the cyanosis is associated with a large increase in the number of red blood cells, that is, with a true polycythemia, then the essential symptoms of Osler's disease are present. The polycythemia must be of a marked degree. As suggested by Dr. Cabot of Boston, 6,000,000 to 6,500,000 of red blood cells to the cubic millimeter may be found not infrequently in the blood of perfectly healthy athletic young men and must not be considered abnormal. The blood count of Osler's disease should show at least 9,000,000 and up to 12,000,000 red cells.

On the other hand the cyanosis must not be due to any of the usual and well-known causes. As Professor Osler remarked, ordinarily when a patient is able to come to a physician's office without assistance, yet is suffering from a marked degree of cyanosis the medical man thinks at once of long standing and advanced emphysema. Other prominent causes for chronic cyanosis are cardiac and renal disease and occasionally advanced tuberculosis of the lungs. None of these causes are present in patients who are the subjects of the new clinical entity. There is no emphysema, no tuberculosis, no cardiac disease and only a slight amount of albuminuria to indicate the existence of any renal disease. The renal disease is evidently not an important factor in the case and is very probably a consequence or a complication rather than a primary etiological factor in the cases. With the increase in the number of red blood cells there is a normally proportionate increase in the hemoglobin value of the blood. This may reach as high as 180 per cent., corresponding to a red blood cell count of from nine to twelve millions. All of the patients so far seen have presented a history of chronic constipation and have had an enlarged spleen.

Dr. Osler, in discussing his own cases and a number of cases which he has found in the literature, for he makes no claim to have been the first to see the disease but only to have been the first to suggest its independent character, gave prominence to certain features of the possible etiology of the new affection. He called attention particularly to the fact that in cyanosis congenita, that is, the dark blue appearance so commonly seen in children suffering from congenital malformation of the heart, there is often a distinct polycythemia present. This polycythemia corresponds in amount to that seen in the new disease, reaching from 8,000,000 to 10,000,000 of red blood cells to the cubic millimeter. Dr. Osler's patients, however, presented no cardiac symptoms that would point to the existence of congenital malformation of the heart and all of them had reached adult life or even were past middle life. In spite of the cyanosis in the cases dyspnea was not a marked clinical symptom and only existed to a slight degree under circumstances of special exertion or emotion.

While there is no dyspnea, patients do suffer from a distinct feeling of discomfort and in similar cases, reported by others, have also been liable to hemorrhages from the mucous membrane and especially vomiting. The generally uncomfortable feeling that develops in these cases, makes the patients extremely restless and is relieved by venesection. The value of this method of treatment was found by the relief afforded in one case after a very large hematemesis in which several quarts of blood were vomited. From the readiness with which Dr. Osler's ideas were taken up by others it is evident that a number of cases falling under the new clinical entity must exist in this country and practitioners who are on the lookout for this rather easily recognizable group of symptoms will doubtless be rewarded by the discovery of a number of further examples. The study of the pathological basis of the disease and the treatment of its symptoms and complications will doubtless add an interesting and creditable chapter to American Medicine.

## THE SURGICAL TREATMENT OF BIRTH PALSY.

It is a matter still not definitely proven whether electricity, massage and passive movements hasten motor or sensory return in peripheral nerve injury. Certainly the presence of a minimum of voluntary power should be employed in preference to any amount of electrical treatment. The proper province, however, of electricity in these peripheral affections is one of diagnosis and prognosis.

Obstetrical palsy is one of the last of the peripheral nerve injuries to be taken from neurological treatment and placed largely under surgical care for nerve section and suture. As yet but few secondary operations on the brachial plexus have been published.

Three years ago Thorburn reported a plexus operation upon a girl of sixteen years, who recovered in greater part from her brachial paralysis, and Lexer did a similar operation two years ago in which results were not definitely stated. Still more recently, Kennedy (*British Medical Journal,* Feb. 7, 1903) has given a short digest of his four operations upon obstetrical palsy which are highly instructive and must give a decided impetus to the surgical treatment of this affection. This is especially true in cases showing no decided and early sign of improvement by ordinary means of treatment. The rule which Kennedy employs to determine the necessity of operation is as follows: When faradism is not obtained in all the muscles at the end of three months (although galvanism may still be very good) surgical interference is indicated.

The rationale and technic of the operation is placed in the same category as that of surgical treatment of injury in peripheral nerves in general.

The more recent data seems to show that while many obstetrical palsy cases are the result of manipulation in delivery many cases occur in normal presentation as the result of forcible depression of the shoulder while the head is bent to the opposite side and rotated. The first case reported by Kennedy three years ago was a total paralysis of the brachial plexus through cicatricial adhesions; the latter were removed by operation and practically complete recovery obtained fourteen months after operation. The second case operated on was one of cranial presentation. Forceps were used causing considerable compression and typical birth palsy developed in consequence. An operation was advised and performed at the end of three months. Twelve weeks after the operation power began to return and in nine months the child had recovered from the palsy, except a little difficulty in supination of the forearm. The third case was a breech presentation followed by torticollis of the right side and Erb's palsy of the same side. The patient regained partial power by the usual non-operative method of treatment, nevertheless there was considerable wasting of paralyzed muscles. The bones of the right arm were also considerably atrophic. As a forlorn hope an operation was performed. The usual cicatricial mass was found and removed. Excision and suture of the fifth and sixth nerves was performed and the torticollis was also corrected. Five months after the operation improved faradic contraction was noticed in the deltoid and biceps without increased motor power. Kennedy thinks too much muscle and bone destruction had taken place for much regeneration; any marked return of power seemed doubtful. It is interesting, however, to note that there was some regeneration even after an apparently irremedial destruction.

The fourth case was a transverse presentation. Version was performed, the arms slipped above the head and in bringing them down the left arm was fractured. The lesion was finally placed in brachial plexus and an operation was performed at the age of six months. Twelve weeks after voluntary movements were not changed but faradic response returned in the deltoid and biceps.

## GROWTH, WEIGHT AND HEALTH.

For the last twenty-five years a series of careful records has been kept of the height and weight of schoolboys at two of the large public schools in England, namely Rugby and Marlborough. As a consequence a writer in the *Westminster Review* is able to make a definite comparison of the physique of the public schoolboy of to-day with his predecessor of a quarter of a century ago. It is interesting but not unexpected to find that the advantage in both height and weight is with the modern boy. At Marlborough a boy thirteen years of age weighs in 1903 nearly six pounds more and is nearly two inches inches taller than the boy of the same age in 1874. A boy of eighteen is four and one-half pounds heavier and nearly an inch taller. The Rugby boy of thirteen in 1902 is two and one-half inches taller and more than six pounds heavier than the thirteen-year-old boy of a quarter of a century ago. The seventeen-year-old boy at Rugby is nearly an inch taller, though one pound lighter in weight, than his predecessor of twenty-five years ago. This very favorable comparison for our generation is undoubtedly due to the greater care that our growing children shall have more outdoor air and exercise than was formerly considered advisable.

The method of computing the comparative physical conditions of the two generations is typical of an order of ideas that has come to have more and more weight with experts in these matters in recent years. While it is not usually recognized the weight of growing children is a much more important sign of general health than any other set of objective or subjective symptoms that can be obtained. The family physician who can have placed before him a continuous record of the child's weight, taken at regular intervals say two weeks apart for several years, has more definite information than any amount of personal observation as to the child's habits in eating and sleeping, complaints of tired feeling and the rest that the mother can provide. If parents were instructed more carefully than at present to keep such a record physicians would not be so much in the dark as to the real condition of children's growth and health as they are at the present moment, because of the absence of specific data as to the progress of the child's development.

Needless to say, it is at the ages which have been noted especially at the public schools that this question of weight and health is most important. Just before and after puberty there are likely to be variations of weight that are significant of the conditions of the general health. If besides the fundamental natural change that is taking place in the organism there is a rapid growth, then there are likely to be calls on the child's nutrition that are very difficult for any but the extremely healthy natures to respond to satisfactorily. Rapid growth is of itself a very trying and exhausting process. When to it is added the demand made by puberty then great care must be taken to see that school exactions and even exhausting exercise shall not interfere with the important evolutionary processes at work.

Children who are growing rapidly at this period are very likely to present symptoms of lassitude, with a distinct disinclination to outdoor exercise and often also to study that are often thoughtlessly set down to laziness. Not infrequently, however, a capricious appetite will be found to be associated with these symptoms, with tendencies to eat large quantities at times and at others to present no desire for food. Careful inspection of the weight chart at these times will show that children or young folks are not gaining normally in weight as they should. When children are found to be below the standard of weight then they should not be tempted either to play or study overmuch, but should be allowed to follow their inclinations without fear of establishing bad habits. Rapid growth is of itself as hard work as any ordinary human being can be expected to accomplish with any amount of comfort and without injury to the delicate organism.

With regard to the standard of weight for growing children that usually given by authorities in the matter is that at five years of age a child should weigh about as many pounds as it is inches high. As a rule this will not be much over or under forty pounds. Children who come of large families should weigh something more than that. The rate of increase should be about two pounds for every inch of growth with a tendency for the weight to exceed this standard proportionately rather than to fall below it. When a child is rather heavier in proportion to its height than this standard it is a sign of good health. If the child is growing rapidly, it should not be allowed to fall much below it without being made to rest more than has been the custom before. A deficiency of weight in proportion to height is always an unfavorable sign. Any interruption in the progress of increase of weight, especially during the continuance of growth must be a danger signal that should not be neglected by those interested in the patient.

Just at this season of the year, when the stress of preparations for examination and of competition for prizes are apt to be felt so much by growing children the weight record should be carefully kept and frequently consulted. To be under the normal weight is to be especially liable to contract the infectious diseases for the resistive vitality is considerably lower than normal. The large insurance companies now insist that even individuals who have attained their growth are much more dangerous risks in the matter of tuberculosis if they are twenty pounds under the normal weight than if they are the descendants of families with tuberculous heredity on both sides of the house, when not intimately associated with those who are actually suffering from tuberculosis. The scale then will have to be considered an instrument of precision for diagnosis and especially for prognosis in the obscure conditions that so often occur in growing children. That it has not been thought so up to the present time is a matter for surprise and is rather due to the old-time tendency to adopt theoretical rather than practical aids in these important questions.

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**Public Hospital for Richmond.**—Daniel G. Reid of New York has given $50,000 toward establishing a public hospital in Richmond, Ind., his native city. The terms are that $50,000 more shall be raised as an endowment fund, and the offer has been accepted. Mr. Reid will also erect a $75,000 church for the United Presbyterians in Richmond.

# ECHOES AND NEWS.

## NEW YORK.

**Roosevelt Dispensary.**—The orthopedic room at the Roosevelt Hospital Dispensary is being equipped and renovated by a sum of money given by a "Lover of Children."

**Change in Public Health Law.**—Dr. Daniel Lewis, State Commissioner of Health, last week announced the appointment of Dr. George H. Fox, professor of dermatology in the medical department of Columbia University, New York city, as consulting dermatologist for the State Department of Health. Dr. Lewis said: "I am calling the attention of local boards of health to the newly signed amendment to the Public Health law, which makes several important changes in the rules governing local boards of health. The principal change is a provision that hereafter local health officers in towns and villages shall be nominated by local boards of health to the State Health Department and shall receive their appointment for four-year terms from the State Health Commissioner. Such an officer may be removed under charges proven after a hearing, but the removal must be approved by the State Commissioner."

## PHILADELPHIA.

**Cerebrospinal Meningitis at League Island.**—An epidemic of cerebrospinal meningitis has broken out among the naval recruits on the Minneapolis at League Island Navy Yard. At the time of writing this letter there have been four deaths from the disease and twelve cases are in the hospital. Tents on the land are being erected and the men from the ship are being transferred to them as rapidly as possible. The origin of the disease is still a mystery.

**Reorganization of Health Department.**—The first official acts of Dr. Edward Martin, Director of Public Health and Charities, are being received with hearty commendation by the press, the public, and the profession. Dr. A. C. Abbott, Professor of Hygiene at the University of Pennsylvania and City Bacteriologist, has been appointed Chief of the Bureau of Health with the combined salaries of the two positions. Dr. Montgomery H. Biggs has been selected as chief resident physician of the Philadelphia Hospital. The act of Dr. Martin that has called forth the heartiest approval was the choosing of a Consulting Board of Physicians. This board is composed of Drs. S. Weir Mitchell, Charles D. Penrose, J. William White, John H. Musser, Hobart A. Hare, and J. M. Anders. It is rumored that the new department will soon place consumption on the list of notifiable contagious diseases.

**Philadelphia Academy of Surgery.**—One of the most notable meetings in the history of the Philadelphia Academy of Surgery was that held on Monday, May 11. The audience included many of the most distinguished surgeons, both of this country and Europe, and the discussions were of the highest order. The paper of the evening was read by Dr. W. J. Mayo, of Rochester, Minn., who gave an exhaustive statistical and critical résumé of his 303 operations upon the stomach and first part of the duodenum. The diseases of the duodenum requiring surgical intervention he divided into two groups: (1) ulcer, and (2) those lesions associated with diseases of the biliary passages. He has never met with primary malignant disease of the duodenum. Of stomach lesions he considered only two—ulcer and carcinoma. Perverted gastric secretion is given the most prominent place among the conditions leading to gastric ulcer which was discussed under the following heads:

(1) Round ulcer, acute and chronic; (2) mucous erosions; (3) chronic ulcers with thickened bases. In speaking of the obstruction caused by gastric ulcer, Dr. Mayo stated that he had endeavored to ascertain the normal caliber of the pylorus under anesthesia by examining every case operated upon. The mean size was found to be about that of a dime. In some instances the opening was large enough to admit a silver quarter. In four cases malignant transformation of the ulcer was demonstrated. Simple gastroptosis is not considered to be a surgical condition. Among the 109 cases of cancer of the stomach there were 17 deaths. The hope of the future lies in early exploratory operations and these operations will depend upon clinical rather than laboratory diagnosis. The technic of the partial gastrectomy employed by the writer was detailed. He now performs entero-anastomosis in addition, as the death of two patients is attributed to the pulling loose of the sutures in the stomach by the weight of the filled loop of intestine below. Dr. Mayo said that it is surprising how many patients suffering from malignant disease of the stomach live more than one year after operation. Some of his patients have now lived more than three years since operation.

**Discussion of Dr. Mayo's Paper.**—Dr. A. Vander Veer, of Albany, said that ulcers on the posterior wall of the stomach form adhesions quickly and are difficult to differentiate from cancer. He no longer employs the Murphy button for gastro-enterostomy but does use it for entero-anastomosis. Waiting in cases of cancer for the diagnosis of the medical assistant is often disastrous for the particular kind of operation the surgeon wishes to employ. In doubtful cases exploratory incision is certainly justifiable and demanded, and serious cases are entitled to exploratory incision and, if possible, a palliative operation. Gastro-enterostomy is the best operation for cases of dilatation as the stomach will return to more nearly the normal condition if drainage be established. Pyloroplasty is really gastroduodenostomy and Dr. Vander Veer is not performing this operation so frequently as formerly, preferring gastro-interostomy instead. In closing, the speaker again emphasized the great value of exploratory incision in doubtful cases.

Dr. G. B. A. Moynihan, of Leeds, England, paid a high tribute to American surgery in general and to the excellent work done by Dr. Mayo in particular. Dr. Moynihan has the enviable record of 75 gastro-enterostomies with but one death. Pyloroplasty he has probably discarded permanently. He also stated that he would never again use the Murphy button. That instrument has been a necessary step in the evolution of this type of surgery but it has served its purpose. The greatest thing the speaker has learned from it is that its use is not necessary. He then explained the technic of gastro-enterostomy as he performs it since studying the effects of the Murphy button. The principal point is that he incises the outer coats of the stomach or intestine, retracts the edges of the incision and then excises the exposed area of mucous membrane instead of simply making an incision through it. This leaves a larger opening. He has never seen a duodenal ulcer except when accompanying a gastric ulcer and hence believes that the former is seldom primary. Gastric ulcer in a large majority of cases is multiple. He has operated on 14 cases of hematemesis. The patient from whom the ulcer was excised died. In the others gastro-enterostomy was performed and all recovered. In some cases it could not be told which one of several ulcers had been bleeding.

Dr. J. B. Murphy, of Chicago, said that the lesions of the stomach in the order of frequency as seen by the surgeon are carcinoma, ulcer, pyloric stenosis, and pyloric retention. To reduce the present mortality the surgeon must see them in the reverse order. As carcinoma develops from preceding pathologic conditions, these conditions, especially ulcer, must be operated upon early if the occurrence of cancer is to be prevented. Dr. Murphy called attention to the fact that the stomach wall is thickened in gastrectasis because of obstruction and mechanical relief is needed. The medical man says there is weakening of the wall and practises lavage, etc. Dr. Murphy emphasized the arguments of Dr. Vander Veer in favor of radical operation for malignant disease of the stomach.

Dr. J. M. T. Finney, of Baltimore, in speaking of pyloroplasty, said that the two main objects to be attended in benign pyloric stenosis are drainage and permanence and these are secured by the operation in question. He had words of commendation for the much-maligned physician who often obviates the necessity for operation which after all is the highest aim of both physician and surgeon. He would perform an early exploratory operation only after the advice of competent physicians. Dr. Finney has had elaborate studies made of the contents of the stomach and of the work accomplished by that organ in several cases after pyloroplasty and the results show that the stomach does normal work. This is considered to be a strong proof of the value of the operation.

Professor Von Mikulicz, of Breslau, also discussed the paper and gave some points in the technic of gastric surgery. He complimented American surgeons on their advancement in the art. He spoke almost entirely in German, hence his remarks were comprehended by comparatively few of the audience.

Dr. J. Chalmers DaCosta spoke of the magnificent work done by Dr. Mayo and the prestige thereby given to the surgery of this country.

**Death of Dr. T. G. Morton.**—Dr. Thomas G. Morton, the eminent surgeon and author, of Philadelphia, died last Wednesday at Cape May, N. J., from gout and cholera morbus, after a short illness. He is survived by a widow, one son, and two daughters. Dr. Thomas George Morton was born in Philadelphia on August 8, 1835, and was the son of Dr. Samuel George Morton, who was a noted physician previous to 1850. He was educated at the University of Pennsylvania, and was graduated in 1856. At the beginning of the Civil War he became actively identified with the establishing of military hospitals. In 1876 he was appointed a commissioner to erect a State insane asylum for the Southern District of Pennsylvania. He was chosen President of the Pennsylvania Society for the Restriction of Vivisection in 1880, and Vice-President of the Society for the Prevention of Cruelty to Children in the same year. He published many professional papers in the *American Journal of Medical Sciences*, together with works on the transfusion of blood and its practical application.

## CHICAGO.

**Respiratory Diseases.**—The number of deaths recorded last week from pneumonia (178) was the highest ever recorded. In the weekly bulletin of health of May 9, the following comments are made regarding the prevalence of preventable respiratory diseases: Since the first of the year, 2,487 deaths have been attributed to this one cause (pneumonia), or nearly one-fourth (23.3 per cent.) of the total deaths from all diseases. Adding the deaths (448) from bronchitis, these two preventable respiratory diseases have caused 269 more deaths since Jan. 1, than the aggregate of all the other important communicable and more or less preventable diseases, as shown by the following: Consumption, 1,139; acute intestinal, 423; typhoid fever, 239; diphtheria, 192; whooping cough, 165; measles, 158; scarlet fever, 148; influenza, 137; puerperal fever, 48; rheumatic fever, 40; smallpox, 39; erysipelas, 38. Total, 2,766; total bronchitis and pneumonia, 3,035.

**Air Infiltration.**—The municipal laboratory, under the direction of the Commissioner of Health, has been making experiments looking toward the prevention of air-borne diseases by filtration, and has published the following statement regarding its work: The end in view is to devise some simple and inexpensive means by which all the air that enters a building or any of its rooms may be filtered of outside impurities, and all that passes out may be similarly cleansed of impurities, including possible disease germs, acquired by respiration of or contact with the occupants. It has already been determined by the experimenters that passage through a single thickness of cheesecloth will do this to a satisfactory extent, and steps are being taken to equip the laboratory windows with such screens or filters.

**Reversal of the Decision Against Dr. Webster.**—In a suit for alleged malpractice against Dr. Geo. W. Webster, in which a jury awarded damages of $13,000, the verdict has been set aside by Justice Hutchinson, and a new trial granted.

**Meeting of Illinois Nurses.**—The Illinois State Association of Graduate Nurses held a business meeting recently. A committee on means of increasing the efficiency of those engaged in caring for the sick submitted its report, which was approved. The report recommended that applicants for admission to membership must have had two years' training in a general hospital, together with classified instruction during that period; that all nurses take a special course in the handling of contagious diseases; that chemistry and bacteriology be added to courses of instruction for nurses, and that all hospitals where nurses are trained be required to give special instruction in the practice and theory of cooking and in massage.

**St. Ann's Sanitarium for Consumptives.**—This sanitarium will be opened in about two weeks, and will be entirely in charge of the Poor Handmaids of Jesus Christ, the Order of Sisters who have charge of St. Elizabeth's Hospital on the West Side. With the help of a citizens' committee of 25, the Sisters raised a nucleus of $25,000, and purchased a ten-acre tract of land. The land was laid out into a beautiful park and plans were made for a hospital to cost $175,000, and to accommodate three hundred beds. The building is now finished. It is perfectly fireproof and equipped with the very best modern sanitary apparatus and arrangements.

## GENERAL.

**Site for New Manila Hospital.**—Benito Lagarda, a Filipino member of the Philippine Commission, has given a site in Manila for the General Hospital which is being founded under the auspices of Bishop Brent, of the Episcopal Church.

**Army Surgeons' Convention.**—The Association of Military Surgeons of the United States assembled in Faneuil Hall, Boston, May 19 for the twelfth annual meeting. Among the guests were: Lieut.-Col. Costelli of the Italian army, Lieut.-Col. d'Angrier of the Mexican, Col. de Wreden of the Russian, Col. Rearson of the Canadian and Col. Charlton of the British army. Surgeon-General Wyman of the Medical Marine Hospital service, and S. J. Wise of the United States navy, were present. Brig.-Gen. Robert A. Blood, Surgeon General of Massachusetts and President of the association, said in his annual address that the membership was 1,200. He spoke of the criticism of the Medical Department during the Spanish war, and said that the charge of mismanagement was "unjust and untruthful," and the responsibility must be placed elsewhere. "If Congress goes to war without ample preparation," he said, "then the army must suffer. Congress voted for war before the Medical Department was ready. Will this happen again? I am afraid it will."

**Tropical Worm Disease in Germany.**—Advices from Berlin state that the Government Commission has been investigating the tropical worm disease which has attacked 20,000 Westphalian miners and reports that those only are affected who are obliged to remain constantly underground and do not get the sunlight. The sufferers will be isolated and cleanliness and sunshine insisted upon as the chief remedies. One hundred and fifty specially trained physicians are being engaged by the commission to fight the malady.

**Tulane Hospital Bequest Upheld.**—Judge Sommerville, of the Civil District Court, rendered an opinion in the case of the succession of Alexander C. Hutchinson, in which he decided against Edward A. Hutchinson, brother of the railroad magnate, and Mrs. Emma Hutchinson Moore, his sister. Edward Hutchinson and his sister contested one clause of the will of Alexander Hutchinson in reference to the enormous bequest made to Tulane University for the establishing and maintenance of a hospital in connection with the Medical Department. Mr. Hutchinson left a large sum of money for this purpose. Mr. Hutchinson's brother and sister brought suit to contest that clause in the will, contending that Tulane University or its administrators did not have the power of administering, controlling or disposing of the fund.

Judge Sommerville, among other things, said: "The conclusion thus reached, that the faculty of the Medical College of Louisiana is no longer in existence as a corporation, and that the prohibition against it receiving by bequest died with the corporation, really disposes of plaintiff's first ground of complaint against the will of Mr. Hutchinson, to the effect that it contains fidei commissum. The donation is to Tulane direct, and in full ownership, and not for the benefit of a third person. Its Medical Department is not a third person; it is one of the essential and component parts of Tulane University. Tulane would not be a modern university of learning without a medical department."

**Legislation for Children.**—The establishment of the Children's Court in New York, the separation of children and adults in penal institutions and the removal from the custody of the police of children awaiting trial, are only parts of the new system of legislation for the safeguarding of children which has been much advanced in several States this year.

In Michigan a constitutional amendment has been adopted empowering the legislature to provide for indeterminate sentences and paroles for child prisoners.

In Massachusetts the new law includes station houses in the number of institutions to which a child under 12 cannot be committed.

Pennsylvania adopted in 1901 a new children's law as to dependent, neglected and delinquent children under 16, creating children's courts and probation officers, prohibiting the commitment of any child under 14 to jail or police station, and providing for State supervision of juvenile reformatories.

Wisconsin adopted a law in the same year establishing a juvenile court with power to appoint probation officers, requiring children under 16 to be brought before this tribunal for any criminal offence and prohibiting children under 14 from being committed to police stations, or children under 16 from being imprisoned with adults.

In Ohio the commitment to the State reformatory of male prisoners over 16 and under 21 who have been convicted of felony has been made mandatory.

In practically all the States where new legislation on the subject of children has been adopted it has been in line with the legislation of New York separating the cases of children from those of adults in criminal proceedings.

A bill establishing a children's court for Brooklyn was passed by the Legislature, and likewise a bill extending the probation law to all courts in the State. Under it the age limit of 16 years is removed.

**Maryland Medical and Chirurgical Faculty.**—A bombshell was exploded at the morning session of the Medical and Chirurgical Faculty last week in the shape of a tender of the resignations of four hold-over members of the State Board of Medical Examiners—Drs. Eugene McE. Van Ness, W. W. Wiley, J. McPherson Scott and F. B. Smith. At a previous executive session Dr. L. A. Griffith, of Upper Marlboro, had spoken at length on the refusal of the District of Columbia to recognize the Maryland medical laws to the extent of permitting registered Maryland physicians to practice in the District, and criticising the Maryland practice of giving such privileges to the District doctors in the absence of reciprocal advantages. Dr. Griffith was later elected a member of the State Board of Medical Examiners, and in view of his previous remarks Drs. Van Ness, Wiley, Scott and Smith considered his election an indorsement of his criticism, which, they felt, was to some extent directed against the board. They accordingly sent in their resignations.

Dr. William H. Welch spoke briefly on the resignations, saying that the gentlemen had acted under a misapprehension, as the faculty had not had the remotest idea of criticising the board. He offered the following resolution, which was unanimously carried by a rising vote:

Resolved, That the Medical and Chirurgical Faculty of Maryland has received with regret the tender of the resignations of Drs. Van Ness, Scott, Wiley and Smith from the State Examining Board and desires hereby to express its appreciation of the integrity, the impartiality and the intelligent, arduous and faithful labors of the members of this board.

The faculty would, therefore, be most reluctant to accept these resignations and earnestly urges these members, in whom hereby full confidence is expressed, to withdraw their resignations and to continue in the discharge of duties of the highest importance to the interests and welfare of the medical profession of this State.

**Tuberculosis and Smallpox in Maryland.**—The subjects of tuberculosis and smallpox occupied the rest of the session. Dr. Henry Barton Jacobs read a paper on "Our Need of a Mountain Sanatorium for Indigent Consumptives," which he showed to be a most urgent one. He referred at length to the nucleus for such a hospital which has been formed by the conditional offer of $25,000 by a friend of the Eudowood Sanatorium, at Towson, and the collection of $4,000 additional by the Quarter Club. This club and the Hospital for Consumptives will hold a large concert this week at Music Hall for the purpose of further swelling the fund. Dr. Jacobs advocated a public subscription for the purpose, and said that if $10 apiece would be gotten from each of the 500 churches of Baltimore it would go far toward making the movement a success.

Dr. Jacobs' paper was followed by a discussion on methods for the prevention of the spread of tuberculosis in the city and State, led by Dr. W. S. Thayer and participated in by Dr. Jacobs, Dr. William H. Welch and Dr. J. S. Fulton.

Dr. Thayer advocated compulsory registration of all tuberculosis patients, as is now done in New York, and the enforcement of the existing anti-spitting laws. He also thought these laws should be extended to the farthest degree. He urged the appointment of lecturers by the faculty to go before the county medical societies and the rural school teachers and give comprehensive instruction on the nature and means of preventing tuberculosis. There should be, he said, referring to Dr. Jacobs' paper, two classes of sanatoria—one for advanced and incurable cases, and the other for the cure of such incipient cases as are amenable to treatment. Dr. Welch said it had been demonstrated at Breslau that loud talking and coughing cause the emission of tubercular bacilli, but that the fact remains that the greatest source of infection is from the dried sputum of those afflicted with the disease, and urged the adoption of the measures of registration and segregation already advocated.

**Obituary.**—Dr. John Van Harlingin, a well-known Brooklyn physician, is dead of heart trouble at his home, No. 195A Cumberland street. He was born at Millstone, N. J., fifty-seven years ago, and was a graduate of Columbia University.

## SPECIAL ARTICLE.

### A PRELIMINARY COMMUNICATION ON THE ETIOLOGY OF VARIOLA.*

BY DRS. WILLIAM T. COUNCILMAN, GEO. BURGESS MAGRATH, WALTER REMSEN BRINCKERHOFF,
OF BOSTON, MASS.

It has been thought best to present this preliminary statement of certain observations which have been made in the course of an investigation on the pathology of variola. The investigation was made possible by the liberal and enlightened policy of the health department of the city of Boston, which gave the investigators access to material for anatomical and histological study, and opportunity for the clinical study of the disease. Our thanks are in the first place due to Dr. S. H. Durgin and his associates in the health department. A full report on the disease, with detailed descriptions of the lesions, will be the subject of a later publication.

In 1892 Guarnieri described in the lesions, both of vaccinia and of variola, certain peculiar inclusions in the epithelial cells. These inclusions, regarded by Guarnieri as living bodies, have been studied by many investigators, and a variety of opinions formed concerning them. They have been regarded as organisms, as leucocytes, or fragments of leucocytes, which have become included in the epithelial cells, and as products of degeneration peculiar to the disease. The most valuable work on the matter has been done by Wasielewski, who regarded the inclusions as organisms. The life cycle of the supposed organisms was not established, and the investigations up to the present have not presented enough evidence for the acceptance of these bodies as living organisms.

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In the lower layers of the epithelial cells of the skin, before there is any anatomical evidence of vesicle formation, there are found small, structureless bodies, from one to four microns in diameter. The epithelial cells at this time present little or no evidence of degeneration. The bodies, one or more in number, lie in vacuoles in the cells. The vacuoles are at first but little larger than the enclosed bodies. The bodies increase in size, and evidence of structure, consisting of granules more distinctly stained and lying in definite spaces, begins to appear. With the increase in size of the body, the vacuole of the cell enlarges until a large central space around the nucleus is formed. At this time there is but little evidence of degeneration of the nucleus. The body continues to increase and becomes granular, the granules lying in a reticular structure. The form of the larger bodies is irregular and suggests an ameboid character. They may become as large as or larger than the nucleus of an epithelial cell. A definite nucleus has not been made out in them, unless the reticular structure which stains more intensely than the rest of the body be so considered. At this time segmentation takes place, leading to the formation of small, round bodies about one micron in diameter. All this is best seen in the acute hemorrhagic cases. It may also be seen in the advancing edge of a young vesicle, the bodies becoming larger and more definite in structure as the formation of the vesicle advances. The bodies in the cells we regard as living organisms, and the gradual growth and final segmentation as a cycle in its life history. Up to this time the nuclei, although showing such evidences of degeneration as the massing of chromatin in the periphery, are not greatly altered.

At the period of segmentation, and when most of the intracellular bodies have disappeared, small round or oval ring-like bodies appear in the nucleus. These increase in size and acquire a definite structure, consisting of a series of vacuoles around a large central vacuole. The rim of the central vacuole stains more distinctly than do other parts of the body. One or more of these bodies may appear in a single nucleus. When several are present they are smaller, but have the same structure. The bodies become larger, the nuclear rim grows less distinct, and finally disappears, and the body lies in a completely degenerated cell, or this breaks down, setting free the body. With the growth and development of the intranuclear body, the vacuolar structure becomes less evident, and finally a structure is formed which contains numerous fine vacuoles. At this time small circular bodies begin to appear in it, and groups of these are surrounded by a faint ring, which probably represents the remains of the body in which they were formed. The circular, ring-like bodies have a central dot. They are one to one and a half microns in diameter, and are seen with great difficulty. They were first found in a photograph of the tissue. Single ones and clumps are also found.

We regard this intranuclear body as a further stage of development of the intracellular body, and as representing a second complete cycle of development. It develops from the spore-like bodies produced by the segmentation of the intracellular body, which pass into the nucleus. The spores which are formed from its segmentation we consider the true infecting material of variola. In a case of hemorrhagic smallpox we have found bodies similar to these spores in a blood vessel of the skin.

In vaccination of the rabbit and calf, Doctor Tyzzer, who has been following this line of investigation, has found bodies similar to those met with in the first cycle of the smallpox organism. The complete cycle of this organism, which corresponds to the primary cycle of the smallpox organism, has been traced. Doctor Tyzzer has never found any of the *intranuclear* forms. The inoculation of the rabbit, with contents of variola pustules, gives rise to bodies similar to those in vaccinia and in the first cycle of variola. Here, also, it has not been possible to follow the complete cycle. The *intranuclear* forms have not been found, although carefully sought for. Inoculation of the monkey, with contents of variola pustules, produces lesions which we must regard as variola, and in these the *intracellular* and the *intranuclear* cycles are found, occurring in the same sequence as in man. From this we regard it as extremely probable that in smallpox the complete development of the parasite through two cycles takes place, and that in vaccinia the primary cycle only. Definite conclusions, on this, however, can be reached only by further study of vaccinia in animals subject both to vaccinia and to variola. The variola spore, in such an animal as the calf, finds conditions which allow of the development of the primary cycle only. The spore-like body, which is formed in this cycle when introduced into an unprotected human being, goes through the same development, producing vaccinia.

In variola the entire process of development of the parasite is concluded with the formation of the young vesicle. The spores are present in the contents of the vesicle and of the pustule, but their recognition among the detritus of cells and exudation is impossible unless differential methods of staining them shall be discovered. We have also seen forms of the intranuclear bodies, which seem to show that the intranuclear cycle is sexual in character.

## CORRESPONDENCE.

### OUR BERLIN LETTER.

[From Our Special Correspondent.]

Berlin, Germany, April 25.

AMERICAN PRACTITIONERS' SOCIETY—VERITABLE MECCA FOR MEDICAL WORK—BLOOD CULTURES AND THEIR VALUE IN DIAGNOSIS—BERLIN FOR PATHOLOGY, NEUROLOGY AND DISEASES OF THE STOMACH; VIENNA FOR INTERNAL MEDICINE AND GENERAL ROUTINE WORK—UNREMUNERATIVE PRACTICE—PRE-ASEPTIC SURGERY—KRAUS SUCCEEDS GERHARDT—TAKING HIS OWN MEDICINE—QUACKERY RAMPANT—LARGEST HOSPITAL IN THE WORLD—ARONSON'S SCARLATINA SERUM—NEW METHOD FOR DETERMINING RENAL SUFFICIENCY—EXODUS OF MEDICAL MEN.

A new feature has quite recently been added to the social life of the American physicians temporarily residing in Berlin, by the organization of the "Practitioners' Society," whose object lies in furthering the social and intellectual intercourse among the English-speaking professional men of this city and in disseminating such knowledge as may be of general interest. This gathering has been hailed with delight by all new-comers and appreciated as a long-felt want by our more acclimated colleagues, and one wonders indeed why, with 50 to 100 medical men here the year round, the idea has not been conceived before. With American boarding-houses, newspapers and other American commodities galore, the weary traveler, reaching this veritable Mecca for medical work, has hitherto felt reasonably at home, but now will appear as if transported to his native soil for one short evening in the week at least. The Practitioners' Society is a thoroughly informal affair; it meets every Saturday night at the Terminus Hotel (Friedrichstrasse, 101) and the members pass the time by discussing what they have seen and heard of new things in the medical world or else amuse themselves in lighter vein. The recent arrival in Berlin, armed with letters of introduction, is only too eager to meet the gods he worshiped in his text-books but he will soon recognize that he is still at a distance from the fountain of knowledge for which he thirsts. He generally passes through three stages, first, like a sailor stranded on a desert isle, he knows not whither to turn; then he can be seen to take courses which he does not want and which turn out to be "gold-bricks," until finally, after a waste of more or less valuable time, he packs up his things to go through the same performance in another city, or else gets settled. The Society will enable him to abbreviate the first and second stage, as he will always meet classmates or colleagues there who are eager to set him right.

The meeting of last Saturday was well-attended and of exceptional interest. Dr. E. Libman, of New York, gave a short résumé of the technic of blood-cultures and of their value in diagnosis. The importance of a negative result was especially emphasized, as a persisting fever without bacteria in the blood would indicate that a focus had formed elsewhere and it is the duty of the physician to search for this focus. Dr. E. Aronson, of New York, gave an acount of his experience with the Sahli test-meal in the diagnosis of gastric disorders. Aside from lacking homogeneity, the soup recommended has proven very troublesome to make and the results are far from accurate, so that it is questionable whether it will come into general use. The discussion then drifted to that burning and oft-time ventilated question, which of the two cities, Berlin or Vienna, offers the best facilities for medical study. The general consensus of opinion seems to be, that the latter deserves first prize for general work and Internal Medicine, while in Berlin the specialties, among them Pathology, Bacteriology, Neurology and Diseases of the Stomach in particular, receive more attention. In Surgery, both places present equal advantages,—one is almost inclined to say disadvantages, for many of the older celebrities only too clearly show that their training dates from the pre-aseptic days.

In place of the late lamented Gerhardt, the Berlin faculty has found a successor in the person of F. Kraus of Graz, of whom it can justly be proud. His literary work having been chiefly confined to Physiological Chemistry, he is not so well known to Americans as internist. In spite of excellent clinical material, Internal Medicine in Berlin has hitherto been taught in a rather dry and uninteresting fashion, so as to drive the majority of men to other cities. Kraus has already won the hearts of the Americans and his profound knowledge and excellent address have filled his clinics to the dismay of the other heads of the department. Yet like that great, lamented master of Surgery, Billroth of Vienna, he feels himself upon strange soil and the jealousy between German and Austrian does not fail to embitter his position.

That physicians must sometimes drink their own medicine and experience the effects of the knife they have so often wielded, is true even here in Germany. Freund, the noted gynecologist of the Krankenhaus Friedrichshain, recently went through a serious operation for gall-stones, performed by Körte. To the gratification of his many friends and admirers, his recovery was perfect and he will soon be back at his post of duty.

It is a pity to see that in a country where so much care and attention is devoted to the excellency of medical education, the financial condition of the physician should be so alarming as it is here, in this very capital. The number of doctors who do not earn the butter for their bread is legion and the recent Narden-Kötter trial has disclosed the fact that many will stoop so low as to enter the services of quacks to make their living. This has astonished the German public no less than the foreigners, who are accustomed to regard the professional men here as bound down by especially severe rules of ethics. But their halo already shines less brightly and a grand crusade against the ever-increasing order of quacks is afoot. With private practice poor, the hospitals are however doing "a rushing business," and the Rudolf Virchow Krankenhaus in the Seestrasse, the fourth city hospital in Berlin, and the largest institution of its kind in the world, is rapidly approaching completion.

The spring vacation is almost over and the exhausted students who have sought rest from their arduous duties away from the city with anything but ideal weather, are slowly and sadly tramping back for the summer semester. The list of matriculants at the Berlin University is a long one and a large number of Americans were present among those who attended the opening ceremonies and who were permitted to shake hands with the Rector in return for their promise to lead an honest and upright life while connected with the University. The medical world has not yet recovered from the holiday spirit which has permeated all its ranks and there is stagnation in the field of advance.

More critical judgment is taking the place of the enthusiasm manifest in the early part of the year for Aronson's serum for scarlatina and septic conditions. Though opposed by the Vienna school, Aronson has found a warm supporter in A. Baginsky who is favorably impressed by some of the results he obtained in scarlatina. The serum is manufactured by passing different colonies of streptococci several times through the bodies of larger animals and then withdrawing their serum. In many cases a slow defervescence sets in and the patient remains free from complications but in no instance was the effect so marked as with diphtheria antitoxin.

A new method of determining renal sufficiency is suggested by Klemperer, more on theoretical than practical grounds, for the number of cases treated are really too few to enable a definite judgment upon the value of the method. He isolates the urochrome from the total amount of urine excreted during 24 hours by a simple chemical process and then approximately determines the percentage by means of a color-scale. In health 0.8 to 2.7 grams of this substance are excreted daily, while with appreciable destruction of renal parenchyma lower figures are obtained.

With the two large medical meetings at Madrid and Washington close at hand, one is not surprised to notice a general exodus of medical men. Ewald, of stomach fame, has prepared an exhaustive paper on the diagnosis of gastric ulcer for Washington; he feels flattered by the invitation extended to him and is anxious to know the country, since he has become acquainted with so many Americans in his course. It is gratifying to note the respect with which Americans are treated and their medical training is being appreciated more and more. It will be many a day, however, before German supremacy in pathology is lost, owing to the large number of autopsies, which are possible only here. The clinical material, too, lends itself better for study, since more docile. Withal, it is generally predicted that the day is not so far off when our German brothers will make pilgrimages to the United States in search of knowledge.

## TRANSACTIONS OF FOREIGN SOCIETIES.

### French.

THE DEFENSE OF THE ORGANISM IN THE NEWLY BORN—SUTURE OF THE EXTERNAL ILIAC ARTERY—HEMORRHAGIC PACHYMENINGITIS WITH CHROMODIAGNOSIS.

MM. CHARRIN and DELAMARE, at the Academy of Science, March 23, 1903, read a paper on the defense offered by the organism in the newly born, establishing the following points: In the newly born among the offspring of diseased parents, the frequency and gravity of certain morbid processes are incontestible. For an explanation of these facts, ordinarily one invokes various factors, for example, delicacy of the tissues, failure of immunity notwithstanding favorable surroundings, etc., but the authors have sought to elicit more precise causes. Contagion itself, indeed, plays an important part, but it is less important during the age of play than that of school life or of boarding-school life. On the other hand, the attenuating influences of the exterior protective elements, like sunlight, warmth and oxygen, is exercised indefinitely in all ages. On the whole examination of the various means of defence established at the various portals of entrance reveals the following important defects. The sweating function of the skin before the fifteenth day of life, especially in athrepsic parents is especially defective. The sweat in its reaction, composition and excretion constitutes a defence both chemic and mechanic. Insufficiency of it explains at least in part why one observes so often the various cutaneous infections of which authorities like Beill have demonstrated an external origin. It is probable, moreover, that in interfering with thermogenesis by evaporation and vasomotricity the imperfection of this secretion takes part likewise in the causes of general predisposition. More frequently, indeed, than through the skin, bacteria enter through the digestive and respiratory tract. During the first month of life, intestinal disorders are common. With regard to this point the authors have obtained encouraging results by means of extrabuccal alimentation with the aid of various medicines, sugars, fats and peptones. The vigor of young tissues, under the influence of rest and of cessation from irritation inherent in daily function tends to rapid repair. Under the services of the alimentary canal the mucus protects the economy, chemically and physically, forming a microbicidal covering. Unfortunately, this substance is less abundant in the new-born than later in life and may be appreciated by chemical and histological examinations. Not only may gastro-enteritis be capable of modifying its local and proportionate secretion, but also it may fail as a whole, as has been recognized by Guillemonat in the last portion of the ileum, exactly where the principal alimentary substances are transformed and should not be retained in the canal. The authors have been observing the peculiar disposition of mucus described by Disse, but they have proved that during the first weeks of life the mucus appears chiefly upon the summits and lateral aspects of the villi, and does not, as a rule, descend as deeply as it does in adults, namely, to the bases. This disposition of the mucus, combined with its quantitative insufficiency makes it possible to understand why such substance as iodide of potash or the toxic secretions of microbes imprisoned in the loops of intestine closed at both ends when one has gathered these loops in a very young animal, escape and promptly gain a subadjacent layer. This escape is also facilitated by the early development of the absorbing organs, namely, the villi, valvulæ conniventes, and the like. On the other hand, the muscular coat of the intestine, which should be available to discharge material for the purpose of protection is much less developed. It is easy to notice certain babies sleeping with their mouth wide open or half open, causing thus the air to reach the alveoli too dry and too cold and without the aid of germicidal mucus in the nasal fossæ. In this mucous covering there are discernible other defences. Thus, at birth, and comparatively speaking, somewhat later, it is not rare to establish the scantiness and the simplicity of the various diastases, which should be abundant and complex, for example, trypsin, which is largely concerned in attenuating the bacterial poisons, of which several are present even at birth. This relative deficiency is evidently due to a somewhat incomplete development of certain glands or perhaps to the milk diet, because if it is granted that the food may make the ferment, milk alone does not tend to develop the various forms of diastases. Thus, in the new born the portals of entrance are little coated. Moreover, as the deeper tissue has the preference among the male and female children of diseased women, it is not unheard of to discover equally various favorable conditions for the development of disease. These authors have established that such offspring from diseased parents, themselves debilitated, lose by the intestines ten times more proteid substance than a healthy individual. Moreover, the proportion of nitrogen in the urine to the total nitrogen and of carbon to the nitrogen is greater than unity. Moreover, the kilogram of living material, instead of being represented as is the case in the normal state by six decimeters, corresponds to seven or eight, a proportion which lessens radiation, but in order to maintain life the tissues are obliged to engender heat, and as in depleted nurslings, heat is more easily lost and is produced with a combustible which, because the appetite is lacking, and because of intestinal losses and because of errors in digestion, is less abundant and less utilized. Consequently, the cellular vitality is very much overworked. Thus, in virtue of these efforts, one sees hypothermia, and on account of this overworked condition, a decrease in the alkalinity of the body fluids and a decrease in the bactericidal function, and an increase in the organic poisons, often shown by a diminshed urinary toxicity. One must not ignore that in the midst of these cases which are so fitted to hasten an unfavorable outcome, the evolution of attenuated germs, that is, to a change for the better, is prevented precisely by this overtaxed condition, this hypothermia, this diminution in alkalinity, this modification of auto-intoxication, modifications which in words so vague at our command, substitute exact conditions which in their mechanism become susceptible of improvement. In the nurseries of these observers, under the influence of these conditions and of other manifest factors, due to the wasted condition of mothers, their offsprings were given to nurses who were able to bring up their own children. Thus they received the same milk, breathed the same air, and underwent improvement; but without exception the offspring of the sick women are commonly victims of various affections, while the offspring of the nurses were without these affections. In other words the elements of contagion, direct and external, were alike for both series of children; consequently one is obliged to believe that the former group were eminently predisposed. Thus, in the newly born, sometimes in virtue of open doors of entrance, sometimes because certain of their viscera are defective, and sometimes because their resistance to various pathogenic agents is deficient, it is not surprising to find relatively a series of diseases which run a severe degree more frequently than later in their lives.

M. Delbet, at the Society of Surgery, March 25, 1903, reported an observation in behalf of Wiart. It concerned a wound of the external iliac artery which occurred during an operation for radical cure of inguinal hernia, for which the writer was called in in an emergency. Upon removing the packing which was placed in the wound to stop the hemorrhage, Wiart found upon the external iliac artery a wound 5 mm. long. He was able to produce a complete hemostasis by making a suture of the wound, after having placed upon the vessel two Kocher clamps covered with rubber, one above and the other below the lesion. Eight months later he was able to prove to himself that the artery was performing its duty up to the femoral arch, but the pulsations were no longer existing at the bifurcation of vessel. His suture passed through and through the cuts of the artery, which made him think that they caused therefore feels that it is necessary to avoid perforating a thrombosis which finally resulted in obliteration. He sutures in work of this character.

Tuffier stated that for a long time he has been convinced that humidity in the atmospheres of operating-rooms diminshes very largely the activity and thus the number of the germs which are in the air. Therefore he has lately made use of vaporizations of water and then of peroxide of hydrogen and has been satisfied with the results.

M. Forni, at the Medical Society of the Hospitals, March 27, 1903, communicated in the names of Chauffard and himself notes concerning the case of a woman, fifty years old, who was brought to the hospital in coma, and died at the end of eleven days without having regained consciousness. Four days before her death the temperature rose suddenly to 36.5° and then to 41.5° C. A lumbar puncture was made on the eighth day of her disease, and resulted in the withdrawal of an amber-colored fluid containing a little hemoglobin and presenting a slight degree of lymphocytosis. Two days afterward there was withdrawn, on the contrary, a clear liquid not containing hemoglobin, and showing comparatively a normal lymphocytosis. At the autopsy there was found, as had been supposed during the first examination of the fluid, a hemorrhagic pachymeningitis, with clots covering the upper surface of the left hemisphere. The arachnoid showed no alterations, likewise the piamater. The sudden elevation of temperature seen during the last few days of life may be explained by excitation of the thermic sense, situated at the level of the hemorrhage, and then by the fermentation of bacteria, whose action was probably evanescent.

# SOCIETY PROCEEDINGS.

## FOURTEENTH INTERNATIONAL MEDICAL CONGRESS.

*Held in Madrid, Spain, April 23 to 30, 1903.*

(Continued from Page 912.)

### SECTION ON THE PRACTICE OF MEDICINE.

The most remarkable feature of the day was the fact that the session was entirely monopolized by the physicians belonging to the Latin races, and that the communications dealt largely with diseases endemic in Southern Europe. Prof. Maragliano, of Italy, the honorary president, called the attention of the Spanish members to the fact that the Congress had lost the true character of an international affair for the rapid and concise interchange of views—but without effect.

**A New Symptom in the Diagnosis of Arteriosclerosis.**—Dr. S. Miraglia, of Naples, said that the movability of the apex beat offered a symptom of importance, hitherto not described in the diagnosis of sclerosis of the root of the aorta. Normally the impulse lies in the fifth space, between the mamillary and parasternal lines, and migrates, in the left lateral decubitus, to a position midway between the anterior axillary line and the mammillary. Its displacement is about 3 cm. In sclerosis of the root of the aorta, this displacement may amount to 4 or 5 cm. and the impulse may appear in the axillary line beyond. The phenomenon is due to the fixation of the base of the heart, as a pivot, a firm center, around which the heart swings, and, secondly, to the elongation of the heart which expresses the hypertrophy of the left ventricle. No other pathological condition presents this symptom in equal degree. In the "nervous heart" of the young there is, indeed, a somewhat increased displacement, but it is far less in degree. On the other hand, advanced cases of tuberculosis or marasmus also present the phenomenon, owing probably to the decreased resistance of the lungs, but here also there is no possibility of confusing the conditions.

**Cinnamate of Soda in Tuberculosis.**—Dr. A. S. Herrera, of Madrid, said that all the forms of medical treatment hitherto employed in the cure of tuberculosis had, by general consent, been discarded. The last vaunted method, that of Landerer, had given him good results in 20 per cent. of the cases of a very mild type. He had, however, discovered a modification of the method, which enabled him to achieve a cure in 8 per cent. of the cases of advanced tuberculosis with cavity formation. He uses Landerer's solution of 4 of cinnamate of soda to 100 of water, but employs the solution hypodermically instead of intravenously. He can thus give doses of 10 to 20 times the amount, without ill effect. He begins with 3 c.c. and increases up to 20 c.c. daily, which represents the normal dose. He has, however, given 70 c.c. in bad cases without ill effect. The improvement in the symptoms is prompt, and affects first the fever and the marasmus, then the cough. At the end of three months the bacilli have generally disappeared from the sputum. They may persist, however, as long as five or six months. All of the cases which resulted fatally in spite of this treatment presented previous involvement of the gastro-intestinal tract, amyloid, etc., and died, not of tuberculosis but of marasmus.

**Treatment of Rheumatic Affections.**—Dr. R. Bloch, Austria, asserted that the hypodermic injection of tropacocaine, in the form of a Schleich infiltration, accomplished therapeutic results not approached by any other method in the relief of the agony of neuralgias and myalgias of rheumatic origin. The injection should be made in the area of greatest tenderness to pressure, and varies slightly in technic from that practised for surgical purposes inasmuch as it demands the injection of as large quantities of the fluid as possible, with a syringe capable of exerting powerful pressure. The method is successful in acute, subacute, and chronic cases in which fibroid changes have not already taken place; furthermore, it offers a sign of diagnostic importance, since it offers relief only in the neuralgias of rheumatic origin. In rheumatic affections of tendons and joints it is available only in very light cases, with small amounts of exudation.

Prof. Castellvi, of Madrid, said that his method of obtaining analgesia in all the forms of neuralgia by the injection of pure oxygen gas at high pressure into the tissues also gave admirable results in the pains of chronic rheumatism and arthritis deformans. He illustrated his instrument, which consists essentially of a metal cylinder capable of holding the gas at high pressure, of a simple apparatus for regulating the flow of the gas, and of rubber tubing which connects the cylinder with a fine hypodermic needle. The injection is practised preferably at the point of emergence of the nerves. The dose varies from 200 to 1,000 c.c. of the gas, and must be empirically determined. Several injections may be made if there are seats of pain in various parts of the body. As a rule the resulting analgesia, which the author attributes to the chemical action of the gas, is limited to a zone of small radius from the center of injection. The pain begins to diminish about 15 minutes after injection, and the effects generally last 24 to 48 hours. It is almost specific in neuralgias, *e.g.*, sciaticas.

**Radioscopy in Pulmonary Tuberculosis.**—Dr. Hennecart, of Sedan, said that a study of 32 cases of pulmonary tuberculosis with the help of the X-rays had convinced him of its efficiency as a diagnostic aid. He found in 30 cases a diminution of clearness at the affected apex. In 14 cases, he found a decreased area of pulmonary illumination (Williams' sign). In 29 cases, he observed a diminished excursion of the diaphragm of the diseased side in inspiration.

**Pathogenesis of Cardiac Arhythmia.**—Dr. Espina and Dr. Castellino of Naples reviewed the present views as to the etiology of arhythmia.

**Injection of Oxygen.**—Dr. Castellvi spoke on the relations between diabetes, acromegaly, and Graves' disease. Dr. A. Lorand, of Carlsbad, presented a suggestive paper in which he first pointed out that in all three of these syndromes vascular glands were involved, the thyroid, the frontal lobe of the pituitary, and the islands of Langerhans in the pancreas. Further, the glands are often simultaneously diseased. In Graves' disease, in which he asserted the thyroid was invariably diseased, glycosuria is not infrequent. Glycosuria, indeed, occurs only in conditions marked by hyperactivity of the thyroid. After infectious diseases (Roger and Garnier) in certain forms of poisoning, nervous shocks, chlorosis and primary syphilis (Engel-Reimers) and the lactosuria of pregnancy. Thyroid extract produces glycosuria and even diabetes at times. On the other hand, glycosuria is never associated with atrophy of the thyroid—as in myxedema, hereditary syphilis and the marasmus of cancer and syphilis. Both diabetes and Graves' disease are rare in childhood.

Prof. Codina Castellvi, of Madrid, said that the paper was most suggestive. He believed that the trials might be increased by the addition of paralysis agitans.

Dr. Lorand said that the course of a previously existent diabetes is generally profoundly modified by the supervention of such conditions as tend to produce atrophy of the thyroid, *e.g.*, tuberculosis and cancer. A diabetic may become tuberculous or cancerous and the diabetes is improved. The reverse does not occur. Furthermore, the thyroid has probably a pronouncedly antibacterial function, as is indicated by the action of its extract in vitro. It is rarely the seat of tuberculosis, of syphilis, or of abscess, it swells up in infectious diseases. Secondary atrophy of the thyroid, as in cancer, and tuberculosis is marked by an indurated edema, like that of cretinus, and a similar loathing for albuminous foods.

This paper was followed by a prolonged discussion on the diet in infectious diseases, which was rather excited, but presented little that was new. The Madrid school, notably Castellvi and Garcia, insisted that the condition of the intestinal mucosa in these diseases dictated a fluid diet, which clinically gave the best results. The discussion was robbed of the importance which had been attributed to it by the absence of the chief exponents, Prof. Quievolo, of Pisa, and Ewald, of Berlin. Prof. Maragliano said that Quievolo had achieved excellent results in typhoid by means of rectal feeding.

**Ichrohemoglobinuric Fever Calabria.**—Dr. Francesco presented a paper of local interest.

**Clinical Forms of Hyperchlorhydria.**—Dr. Morena, of Madrid, said that hyperchlorhydria was never a disease, but only a symptom, representing either a nervous derangement of the stomach, an organic disease, or a constitutional disorder. Hence the treatment is extremely difficult, and in most cases is of the symptomatic order. The prime condition is the exclusion from the diet of all irritant or stimulant substances. the alkaline carbonates and earths, and mineral waters are of great assistance. Gastro-enterostomy is advisable in severe cases with myasthenia and dilatation, and in cases which for various reasons cannot submit themselves to proper dietetic therapy.

Prof. Maragliano protested urgently against these conclusions. Hyperchlorhydria, per se, is invariably the manifestation of a functional derangement, never of anatomical change. Hyperchlorhydria is subject to nervous influences, and to hypnotic suggestion. It is almost invariably controllable by medical treatment, atropine, etc. Surgical intervention is absolutely wrong in cases of secretory anomalies of the stomach. It is probable that we very much overestimate the importance of quantitative changes in the hydrochloric acid, as Riegel himself admits.

This paper was followed by a prolonged discussion by the Italian and Spanish physicians on Pellagra.

**Radiography in Biliary Lithiasis.**—Dr. Gasteln and Dr. Yogue, of Madrid, had radiographed a large number of cases, subsequently submitting their finding to the control of operation or autopsy. Radiography does not permit of the differentiation between stones in the gall-bladder, and dense pericystic adhesions, and hydatid cysts. Thus it fails just where its aid is most in demand.

**Rheumatism.**—Dr. Ibauez, of Valencia, asserted that rheumatism is not of microbic nature, but due to faulty metabolism with accumulation of uric acid. All the forms of rheumatism and gout are manifestations of the same disease.

**Salocreol.**—Dr. Guezda, of Berlin, said that this new drug was a synthesis of the various phenols of creosote and salicylic acids to form an ester. In v. Leyden's clinic it has proven of great value in the treatment of rheumatic joints, of scrofulous glands, and of the adenopathies of measles and scarlet anginas. It may be painted on or rubbed in as the degree of tenderness of the parts dictates, and so applied appears in the urine in a few hours. It has proven of chief value in reducing or abolishing the tendency to suppuration of the acute and chronic glandular swellings.

**Blood Enemas in Chlorosis.**—Dr. Mariani, of Madrid, said that he had experimented for twenty years in the treatment of anemias by this method. It is inefficacious in the symptomatic anemias, but in chloranemias of the most advanced type, which have resisted every other form of treatment, it gives invariably good results. The blood of a sheep, aseptically secured, fresh each day, and defibrinated, is injected in amounts of 300 c.c. There are never any toxic or intestinal disturbances. There is a rapid improvement in all the symptoms, paralleled by quantitative hematological estimates. Moreover, the cure is lasting. The manner of absorption of the blood is as yet unexplained.

**Luetic Arthritis.**—Dr. Singer, of Vienna, described five cases of luetic arthritis observed within three years. Four of them belonged to the tertiary stage. The processes are characteristically torpid and indolent, and marked by swelling of the capsule, thickening periostitis and hyperostoses. Even after years it does not seriously compromise joint functions. The diagnosis is made by the absence of fever and endocarditis, and expivanbilus. Gonorrheal joints often run a similar course and must be excluded. Mixed treatment is very successful.

**Rectal Injections of Antistreptococcus Serum.**—Sir Dyce Duckworth, of London, described a typical case of acute infectious endocarditis, with fever, chills, petechial rash and joint symptoms, which yielded to this form of treatment after every other method had proven fruitless.

**Mucomembranous Colitis and Appendicitis.**—Dr. F. Bernard, of Plombieres, has collected 1,100 cases of mucomembranous colitis, of which 76 or 69 per cent. presented indubitable evidence of appendicitis, while many others had probable symptoms. In 12 cases removal of the appendix was followed by cure of the colitis. Ordinarily the syndrone of appendicitis is present, but not marked, and symptom group might be characterized as "appendicism." Pathologically it is fair to assume that the mucosa of the appendix partakes of the disease present in the cecum and colon; the co-existence of enterolithiasis is also probably an etiological factor of the appendicitis.

**Pseudo-uremia in Urinary Lithiasis.**—Dr. Galland Gleize, of Vittel, said that he had observed cases of long standing "gravel," in which there occurred, with more or less suddenness, attacks which in many points simulated a true anemia. Examination of the urine, however, gave no support to the theory of a nephritis. The attacks were marked by a predominance of gastro-intestinal symptoms, usually lasted much longer than is customary in uremic attcks, and terminated abruptly. The termination was marked by an abundant elimination of sand and calculi. He concludes that the phenomenon is simply a form of nephritic colic of gastro-intestinal type.

**Three Cases of Tuberculosis Treated with Maragliano's Serum.**—Prof. Soler said that in cases in which cinnamate of soda gave results, he succeeded with the serum, which never produced any ill effects. The serum seems to be both antitoxic and stimulant.

(To be Continued.)

## THE AMERICAN MEDICAL ASSOCIATION.

*Fifty-fourth Annual Meeting, held at New Orleans, May 5 to 8, 1903.*

(Continued from Page 905.)

### SECTION ON PRACTICE OF MEDICINE.

Second Day—*Continued.*

**Clinical Diagnosis of Intestinal Parasite.**—Dr. Charles Wardell Stiles, of Washington, D. C., discussed the features by which the presence of intestinal parasites might at least be strongly suspected and at times almost surely diagnosed. In severe cases, if some of the feces be placed upon blotting paper, there will extend around them after a couple of hours' delay a pinkish zone indicating the presence of blood in the stool. This shows the existence in the intestine of some agent causing leakage of small amounts of blood into the lumen and may be taken almost without exception to be indicative of worm parasites. If but few worms occur in the stools they may be found with greater certainty by dissolving the feces in water and allowing them to sediment. All parasites are distinctly heavier than other parts of the stools and sink before long to the bottom. This, like the centrifugation of urine, gives a larger amount of the material it is desired especially to examine in the lower layer.

**Microscopical Diagnosis of Intestinal Parasites.**—With the end of the little finger place a drop of water on a microscopic slide. With a match-stick take a small portion of the fecal material and rub it over this, then place the cover glass and examine carefully. Needless to say it is necessary to go over very many fields and to report the taking of material if the first examinations prove negative. It is very important that too much light should not be admitted or the eggs of the parasites particularly will not be clear, and will lose that distinctive prominence that makes them readily visible when the smaller diaphragm is used, admitting only the minimum of light necessary for working purposes. The examination should be made with the ordinary lens of one-third inch focus. Lower powers than this give wider fields and make the work of going over material more rapid, but unless the observer is very familar with the appearance of the parasite and its eggs he is apt to miss them.

**Dangers of Examinations for Parasites.**—There are certain dangers in the search for intestinal parasites that must not be forgotten. These are not so great, however, as in the handling of bacterial material, though the observer's unfamiliarity with the technic and the fact that, unlike bacteriological examinations, these are made on fresh material adds somewhat to the risks. With regard to both the danger and the disgust produced Dr. Stiles frankly declares that he would rather examine fecal material for parasites than sputum for tubercle bacilli. Certain of the tapeworms constitute one serious danger for the examiner. The eggs of *Tænia solium*, the pork tapeworm, may be in the stool and may be brought to the mouth by extreme carelessness. This parasite is not uncommon and produces in human beings the *Cysticercus cellulosæ* or pork bladder-worm. If the feces of dogs are being examined there is, of course, always danger of the presence of echinococcus eggs. These produce in human beings the well-known echinococcus cysts which may develop in almost any vital part of the human economy.

**Appearances of Ova.**—The eggs of the whip-worm are a slightly elongated oval, with an opening at both ends and a very thick shell, presenting a rather undifferentiated look inside of the visible bands of the shell. This is the most common ovum observed. The hookworm has grown in importance in recent years. The ova are thin-shelled and the internal structure can be rather plainly seen. Usually a certain amount of segmentation has taken place in the egg. At times the embryo's outlines can be very clearly traced. The most important material to differentiate from ova are plant cells. These may occur in forms that are very deceptive. The stage of development of an egg may be of help in the diagnosis. For instance if embryos are noted in the eggs of fresh feces the parasite present is almost sure to be the Cochin China worm—the *Strongyloides.* If the embryos are noted only some twenty-four hours or more after the feces are passed then they are from the uncinaria or hookworm.

**The Dwarf Tapeworm.**—It is probable that the most frequent form of intestinal parasite, in the Southern States at least, will prove to be the *Tænia nana* or dwarf tapeworm. Dr. Moore, of Galveston, first called attention to it. Dr. Allen J. Smith, of Galveston, has reported some cases. Dr. Stiles now knows of five as yet unreported cases in places so distant from each other as Georgia and the District of Columbia. This small tapeworm may produce all the evil effects of its larger brethren. The main diagnostic element is the presence of eggs in the stools, since segments are passed frequently as in the larger tapeworms. This accounts for its failure of recognition heretofore, but there is no doubt that numbers of cases will now be reported from all over the country.

**Appearance of Sufferers from Intestinal Parasites.**—In the severe anemia of uncinariasis, or hookworm disease, there is a fish-like stare in the eye that is very characteristic. This is so notable that it is possible to go through an institution where the presence of sufferers from the disease is suspected and pick them out without more ado, if they are actually present. The appearance of the eye is not unlike that of long-continued alcoholism. It is quite different from the languid eye that accompanies the intense anemia of malaria. There is another very distinctive sign when the infection with the hookworm has occurred early in life, that is before puberty or the attainment of growth. Patients are stunted mentally and physically and the examiner is at once struck by the absence of hair on the body. No hairy growth occurs in the axillæ or on the pubes, and even though the patient may come from a family prone to be hairy, none appears on the rest of the body. This is a helpful aid in picking out cases in institutions which have so far proved the most fruitful field for the recognition of the disease.

**Habitat of the Hookworm.**—Dr. Stiles called special attention to the fact that sufferers from pinworm, all over the world, come from sandy districts. It is possible that this kind of soil furnishes the most suitable conditions for the development of the eggs, though it is well known that these die if they once become thoroughly dried. This kind of country may furnish opportunities for the distribution of the eggs. In Texas the cases of uncinariasis are all from the sandy districts, and it would seem that all patients suspected of having the hookworm should be asked as to the character of their home soil, as a suggestive aid to diagnosis.

**Uncinariasis in the United States.**—Dr. Allen J. Smith, of Galveston, said that there are records, though not very clear, of the uncinaria worm having been observed in the United States between 1840 and 1850. In 1893 Dr. Smith demonstrated the egg of the uncinaria worm, then called the *Anchylostoma duodenale,* in some feces that he had taken from a public water-closet for laboratory work for students. At that time it was thought to be the egg of the pinworm. Further specimens were obtained, always containing embryos but the sufferer from the parasite was not located. Two years ago careful investigations were made in order to decide whether the hookworm existed widely distributed in Texas. It was found in the feces of eight students, none of whom were suffering from any serious symptoms and in whom, the finding of the eggs was the first indication of anything wrong. These students came from various parts of Eastern Texas, so that it is almost certain that most of the State is affected. Dr. Smith was able to find out the nature of the soil in the various localities from whence sufferers had come and Dr. Stiles' rule of sandy regions is fully demonstrated. One of the patients was sure that his infection must have come from chewing cotton sticks, which he has long been in the habit of doing. Dr. Smith is not sure but that this may have some foundation though the material would seem too dry to harbor eggs.

**Treatment of Uncinariasis.**—Dr. Thomas A. Claytor, of Washington, D. C., spoke first of the prophylaxis of the hookworm disease. There is no auto-infection of patients' intestines. The eggs pass out and the embryos develop outside the body or must be carried in again through the mouth. Careful washing of hands before eating has been suggested as the only precaution needed. This is not enough, however, for the material containing eggs may get on to any part of the body and thenec be carried to the mouth, but besides that, it is not sure but that the uncinaria worms sometimes penetrate the skin and find their way through the lymphatics to their usual habitat in the intestines. The first prophylactic precaution must be the destruction of the eggs and larvæ. These die if deprived of air. The suggestion then that the feces of infected villages should be covered up by earth immediately after their passage is a good one but difficult of execution. It has also been suggested that the neighborhood of infected villages should be plowed up frequently so as to cover the worms and their eggs, causing their ultimate destruction.

**The Physician's Duty.**—It must be the duty of the physician to call the attention of those suffering from the disease to the necessity for the greatest care in the disposal of their feces so that they may not become sources of infection for others. All excrement should be passed into closed closets whence it cannot escape into surrounding soil. The affection in this country will occur only among the very poor, so that it will be difficult to secure the necessary prophylactic measures. Of course treatment must be begun as soon as possible and carried out effectually, so as to lessen opportunities for infection and patients must not be allowed to pass from observation when their symptoms have become less and there is an apparent cure, for the affection is most obstinate at times and relapses are not infrequent.

**Treatment of Hookworm Disease.**—The most effective remedy is thymol. It must be given in rather large doses; sometimes as much as 10 or 12 grams are recommended. In such large doses, however, this remedy is not without its dangers. Several cases of collapse, even with fatal result, have been reported and a number of patients have been saved only by immediate recourse to stimulation and after no little alarm. Dr. Claytor has found that 2 grams of thymol, repeated in two hours, and followed two hours later by castor oil, will prove quite as effective as the larger doses without any of the risks they involve. For a time it was thought that thymol was an absolute remedy for the disease. A number of the parasites always come away dying and dead shortly after its administration but it has been found relapses are not infrequent. It is suggested that the doses of thymol should be repeated at the end of a week and that even then the patient should be kept under observation for some time and the thymol repeated if there is any evidence of the recurrence of symptoms from the parasite.

**Danger of Alcohol and Thymol.**—It was suggested that alcohol should be adminstered at the same time with or shortly after the thymol, with the idea of anticipating the liability to collapse. Thymol is meant, however, to kill the parasite and not to be absorbed into the patient's system.. It is soluble in alcohol and while in solution may be absorbed with evil results. At least many clinicians claim so. There is doubt about the matter, however, and at least one good authority who uses large doses of thymol always prescribes an ounce of whisky to be taken at the same time, and so far, has had no serious results. Dr. Claytor has found by experimental work in dogs that there may be some added danger from the use of alcoholic solutions of thymol, but this is not as serious as has been imagined. Thymol fails in some cases to produce its active effect upon the parasites and then other intestinal antiseptics must be employed.

**Anemia from Uncinariasis.**—The anemia resulting from the presence of the parasite is very marked and persistent. This must be treated by tonics, iron, sunlight and an abundance of nutritious food. Great patience and perseverence is needed in the treatment of these cases and tendencies to diarrhea especially must be combated if the patient is to be restored to health completely.

In discussing the subject of uncinariasis, Dr. Harrison, of Alabama, said that the hookworm had been found in seven pupils of the State asylum for the blind, deaf and dumb. Of the seven cases five were blind, but in the other two the characteristic fish-like stare, spoken of by Dr. Stiles, was noted. Fever was found in these cases, usually with temperature of about 100° F., always 99.5° F. Another typical symptom of the presence of the worm is a marked condition of languor. In one institution the superintendent was asked if he had any especially lazy children—inmates who refused to exercise—to play as the others. He immediately recalled two such patients and they were found on examination, to be sufferers from uncinariasis. By simply walking through a cotton factory, in which the disease was suspected to exist, three sufferers were picked out by the characteristic stare.

**Malarial Anemia and Uncinariasis.**—Dr. C. A. Moore, of Alabama, said that malarial anemia had long been held responsible for a number of chronic conditions that are now found to be due to many different causes. Whole battleships of iron have been given and shiploads of quinine administered without effect. The diagnosis can almost be made on sight. There is a pulsating carotid, a systolic murmur, indicative of the intense anemia. It used to be called idiopathic anemia, whatever that may mean, but now it is coming to be known that uncinariasis is the real cause.

Dr. T. A. Williams, of Edinburgh, said that in South America these severe anemias had been considered to be malarial until the discovery of the hookworm showed the other cause at work. Before this the therapeutics of the affection had been very discouraging and the tradition of the failure of quinine in chronic cases had grown up. At Kimberley, fifteen years ago, the affection was at work and was diagnosed as a low grade malaria, or more often classed under some special name. Camp fever was a favorite appellation for the disease.

Dr. Wm. Butt Burns, of Memphis, Tenn., said that the supposed malarial cachexia is undoubtedly due in many cases to the hitherto unsuspected presence of the uncinaria worms. This discovery promises to be of greater importance in the treatment of these conditions than anything in many generations.

**Penetration Through the Skin.**—Dr. Stiles said that the so-called ground itch of the Southern States is undoubtedly not seldom due to the penetration of the hookworms through the skin. This ground itch affects the feet and lower legs of those who go barefoot and the uncinaria present in the soil finds opportunities to get into the organism. Ingestion by the mouth is the more usual way, though it would seem that drinking water is not often the source of the disease. Eosinophilia usually occurs in the course of the disease but its presence only arouses suspicion and is not pathognomonic. There is an increase of eosinophiles in practically every parasitic disease. In the old world the uncinaria is provided with hooks by which to fasten itself to the intestinal mucosa. The American variety of the worm, now spoken of as uncinaria Americana, has whips or flaps by which it anchors itself. The individual parasite has been known to live six years, at least it has been found in a patient that long after leaving the infected area.

**Prevention of Spread.**—The prophylaxis of the affection will be a difficult matter because of the number of worms that may be passed. The record number heretofore has been 1,400, but there is now an American case with 1,750, passed after thymol, and then enough were uncounted to make the actual number over 2,000. For the disinfection of quarters in which patients have been living chemical disinfectants are good but the scattering around of straw and setting it on fire is the best means of assuring the destruction of the eggs in workmen's shanties and the like. In general, fire is the ideal agent. Old clothing likely to have been infected should be burned. Sacrifices in this matter are demanded for safety's sake. The disease does not necessarily occur on sandy soil but this seems to be the most favorable for it and it luxuriates in sandy regions so that this becomes a secondary sign of the disease.

**Anemia Due to Toxins.**—The intense anemia which develops is not all due to the extraction of blood, nor are the nervous symptoms which are apt to develop rather early in the case or at least before marked blood poverty could be expected to have caused disturbance of nerve nutrition. There is evidently then, a toxemia associated with the presence of the worm. Just what the character of the toxin is remains a subject for investigation of the greatest interest. The anemia needs to be treated directly by iron, but after the removal of the parasite the patient must be put under as good conditions as possible with an abundance of light, air and nutritious food.

**Uncinaria and Drinking Water.**—Dr. Allen J. Smith, of Galveston, said that all of the cases of uncinariasis under his observation had been of very mild character. He feels sure that the parasites do sometimes penetrate the skin though not often nor necessarily. Drinking water cisterns may, under certain circumstances, furnish ideal breeding places for the parasites, especially when charcoal is used for the purification of the water. The charcoal furnishes a supply of oxygen to the worms which drop to the bottom of the tanks. As the custom of obtaining drinking water in this way is very common in the Gulf States it will undoubtedly serve to aid in the distribution of the parasite. Dr. Smith pointed out that typhoid fever bacilli might find their way into such cisterns by being blown as dust on to roofs and thence washed by rain into the tanks. In one case an epidemic of the disease affecting mainly the south side of the streets of Galveston, at a season when the prevailing winds were southeasterly, seemed to be explainable no other way.

Dr. Clayter, in closing the discussion said that in his case despite the repeated use of thymol for two months, the patient was not yet free from the parasite, that the high hopes raised of that remedy as a specific for uncinariasis did not apply to all cases of the affection.

**Tropical Dysentery.**—Dr. Charles F. Mason, major surgeon in the United States Army, stationed at Fort Sam. Houston, Texas, detailed the result of his experiences with tropical dysentery. This affection had been attributed to many causes until Shiga's discovery of the bacillus and Flexner's demonstrations settled its etiology. The recent connection of the bacillus with the summer diarrhea of infants makes the disease even more important than before, though it was known to occur in epidemic and sporadic form in this country. The conveyance of the disease is not by contagion, through the air, but as for most enteric diseases by actual swallowing of the germs that have been discharged in the stools of a previous patient. Milk may become infected or uncooked foods may be the material of contagion. It may become dry and be blown about as dust or may be carried by flies or other insects.

**Incubation Period.**—This does not last long, as a rule not more than five or six days at the outside. In one case where a large culture of the organism was swallowed intentionally the dysentery set in within twenty-four hours. In a second case in which a small quantity of the culture was swallowed accidentally the incubation period was forty-eight hours. The first symptoms are usually sudden. The patient may be taken during the night, after having gone to bed perfectly well. There is also a sudden rise of temperature, though sometimes the temperature is subnormal during the whole course of the affection. These latter cases are of worse prognosis as a rule. The more the symptoms of involvement of the intestines that is the more tenderness, pain and tympanites complained of, the worse the prognosis as a general rule. Intense localizations of the affection cause more absorption of toxic materials and breakdown the resistive vitality of the patient and his reactive powers.

**Prophylaxis and Treatment.**—The usual death rate is about 30 per cent. The greatest cleanliness of the hands, the clothes and of all instruments and utensils must be exercised to prevent the spread of the disease. The serum treatment of the disease has given very encouraging results. In severe cases it is not always successful but the mortality of cases treated with the serum is only one-third that of cases treated without it. The mortality under serum is less than one-half that of the best minimum mortality before serum was introduced. As accessory remedies ipecac and salines are of service and their use should not be neglected, even when serum is employed, since by clearing out the intestine they aid in preventing the absorption of further toxic material.

**Infantile Summer Diarrheas.**—Dr. J. Mason Knox, of Baltimore, Md., said that the *Bacillus dysenteriæ*, discovered by Shiga, and studied so successfully by Flexner, was present in the severe summer diarrheas of children in this country. This discovery promises to be one of the most life-saving advances in medicine in recent years. The serum of the blood of little sufferers has been demonstrated capable of causing the agglutination of the organisms of dysentery brought from Japan, while the serum of horses, obtaineed by injecting Shiga's bacillus also agglutinated the micro-organisms isolated from the intestinal contents of the American children. There seem no room for doubt left that the summer diarrheas of children are due to this bacillus which causes epidemic tropical dysentery but has been known to cause sporadic or even groups of cases of dysentery here and there in this country.

**Predisposing Factors.**—The disease is much more apt to develop toward the end of the summer when little patients have been worn out with the heat and with the milder intestinal affections so common at this season because of the luxuriance with which microbic life grows in all food material. This lowering of resistive vitality is important for the disease is noted also to occur frequently in anemic, rickety children, whose vital resistance is at a low ebb. The state of the patient can be better decided by the sphygmomanometer than by the most expert finger since blood-pressure is the most important element in the prognosis. Undoubtedly the use of Flexner's serum will reduce the mortality from the disease, though so far there has been no test experience with it. When it was ready for use last summer the cases under treatment were not of the acute type but chronic in character with symptoms dependent quite as much on their general run down condition as on the infection present.

**Method of Infection.**—Now that the exact nature of the foe which causes such great mortality has been recognized it remains only to prevent the disease. The portal of entry of infection is by the mouth. Contaminated milk or water is the usual source. Unboiled water was found to have been given to most of the little patients. Store milk is especially suspect as a causative agent. Breast-fed infants acquire the disease from unboiled water. Sporadic cases of the disease carry the infection over the winter. Four such cases have been under observation this winter at Johns Hopkins. For months the bacillus may be harbored in the intestine in chronic cases, so that when a child has had the disease precautions must be taken as after typhoid fever convalescence, not to allow the patient to become a source of infection for others. The coming summer will undoubtedly prove most interesting and all practitioners should take the opportunity to have the stools of suspected cases examined by their local boards of health, if possible.

**Malarial Dysentery.**—Dr. Wm. Brett Burns, of Memphis, Tenn., said that there occurs a dysenteric condition often recognized and described in malarial patients in which no other causative agent can be found except the malarial parasite itself. In these cases the malarial parasite has been found in the vessels of the intestinal walls and pigmentary deposits due to the presence of large numbers of the parasites are also found. It would seem that the malarial organism is responsible for a special form of dysentery.

**Pathology of Amebic Dysentery.**—Dr. H. F. Harris, of Atlanta, Ga., said that the ulcers of amebic dysentery always present undermined edges with fistulous tracts connecting with each other at times. The zone of hyperemia around the ulcer shows that toxic products of the amebæ invade the tissues and evidently are the cause of some of the symptoms. Amebæ may be found in the blood-vessels without clotting having occurred so that it is not unlikely that the parasites are carried to the liver in the portal blood in the cases in which hepatic abscess occurs. These abscesses may occur in any part of the liver. The constitutional symptoms are often a prominent feature of the disease and the disease may have a history extending over six to seven years.

**Clinical Symptoms.**—Patients may have as many as 50 stools in twenty-four hours for some time, yet recover from the disease. Great fluctuations are likely to occur. Alcoholics suffer most severely from the disease and the prognosis in them is always more dubious. The presence of large quantities of mucus in dysenteric stools is almost pathognomonic of amebic causation. The diagnosis can be made practically without the microscope in many of these cases. It must not be forgotten, however, that the amount of mucus becomes less in severe forms of the disease when the patient is very much run down. This may prove very deceptive in the terminal stage of the disease. When liver abscess forms there is seldom any warning of the fact until the lesion has progressed to a considerable extent. Local swelling and tenderness may be noted. The absence is usually massive and miliary abscesses are very infrequent in amebic dysentery. Perforation of the intestines may occur, but as there has been a slow chronic inflammatory process before the consequent peritonitis may be thoroughly walled in and cause only localized abscess.

**Amebic Dysentery at Johns Hopkins.**—Dr. T. B. Futcher, of Baltimore, gave the details of 119 cases of amebic dysentery as they occurred at Johns Hopkins in the last fourteen years, 117 of the patients were admitted to the medical wards among 15,000 patients. The disease is not tropical, though heretofore considered to be. Sporadic cases occur in many parts of the country. Prof. Dock reported some from Michigan last year and observers in New York have shown that the disease is apparently, to a certain extent at least, endemic in this country. The infection is evidently by way of the mouth and this emphasizes the necessity for care in the handling of such cases and the need of directing patients very specially so as not to spread the infection. Nearly one-fourth of the patients at Johns Hopkins developed hepatic abscess. This may become pulmonary after penetrating the diaphragm or may, as in one of the cases, invade the right kidney. Eight of the liver abscesses penetrated into the lung and the pus was expectorated.

**Treatment of Acute Dysentery.**—Dr. James M. Anders, of Philadelphia, said that the best remedy in the treatment of acute dysentery is ipecacuanha in large doses (15 to 20 grains). Many patients will not retain this, but if they are made to keep perfectly still, not being allowed even to swallow the mucus, being wiped from their mouths by the nurse, they will often be able to keep the ipecac down until it has its effect of producing large cholagogic stools. Where large doses cannot be retained small doses of ipecac, one-fourth grain, repeated till a like effect is obtained, gives excellent results. In children this form of medication always gives better satisfaction than the massive doses. Other remedies that are efficient are sublimed sulphur, 20 grains with 5 grains of Dover's powder every four hours until large evacuations are obtained. This is good especially in the non-Shiga bacillus cases. The resultant production of $H_2S$ seems to inhibit the growth of microorganisms in the intestines, and causing the dysentery sulphur has some inhibitory influence even over amebæ, and should be used in conjunction with other remedies for the treatment of that disease.

**Local Treatment.**—High irrigations are, in Dr. Ander's experience, good in chronic cases but when the symptoms are acute. In amebic dysentery high injections are almost a necessary part of the treatment. Warm quinine solutions, 1-5,000, or salicylic acid 1 to 2 per cent. or mercury bichloride solution 1 to 6,000 are effective. In chronic cases Dr. Anders alternates with a high injection of an antiseptic in the morning and an astringent at night. The pressure of the injection should not be more than 2 to 3 feet, as high pressures do harm and may even cause rupture through the dangerously thinned base of a dysenteric ulcer. The patient should be in the left lateral or dorsal decubitus with the hips elevated.

**Amebic Dysentery Endemic.**—Dr. Alexander Lambert, of New York, said that he has had under observation a case of amebic dysentery, the sufferer from which had not been away from New York for over five years. Amebic dysenteries do not develop liver abscesses at the North, at least not while in the hospitals. In chronic cases alternate weeks of treatment with 1-5,000 quinine and 1-5,000 nitrate of silver seem to give the best results. Salol and castor oil give the best results by the mouth. There must always be doubt about the cure of cases of amebic dysentery. Relapses are very common. Patients seem to suffer more with cramps in the legs at night in amebic dysentery than in other forms of dysentery.

**Dysenteric Remedies.**—Dr. I. L. Van Zant, of Fort Worth, Tex., said that when the discharges of dysenteric patients were brown bismuth in large doses did good; when they were green, however, it was not of benefit. Since the seat of dysentery is in the intestinal canal it seems better to reach it through the mouth or the rectum than through the circulation by means of a serum. Hyposulphite of soda makes the green stools yellow and usually relieves many of the patient's symptoms. Given with pepsin this is the best remedy for ordinary dysentery with greenish tinge of stools.

Dr. Moore, of Galveston, said that for four years he had studied the dysentery that occurs so frequently in malarial patients but he has not yet quite made up his mind as to whether the affection is a specific malarial effect or not. It occurs in nearly all old malarias but in most of them some other cause than the plasmodium can be found. Amebic dysentery is often cured by quinine but in some cases gets well of its own accord. Cramps are very severe in amebic dysentery when the affection is acute; when there are many amebæ present and these contain red blood corpuscles. Recently Dr. Moore has found that the fluid extract of *Chaparra Armagosa,* a Mexican and West Texan shrub, is an excellent remedy for obstinate cases of dysentery of many types.

**Dysentery in Children.**—Dr. Knox said that the stools of children who suffer this summer from severe diarrheic conditions should be examined bacteriologically. Colonies that develop after twenty-four hours yet produce no gas are almost sure to be due to the Shiga bacillus, though it must be further tested for agglutination to be absolutely sure.

Dr. Harris said that quinine acting on amebæ in a test tube for twenty-four hours fails to kill them, so that he has lost his faith in it as a remedy. He uses instead dilute injections of $H_2O_2$ with excellent results. Usually a single injection is sufficient to effect a cure in a mild case. If patients return to mixed diet too soon and bring on a relapse then the hydrogen peroxide fails to give relief a second time.

Dr. Futcher said that at Johns Hopkins high irrigations of quinine 1-3,000 gradually up to 1-500 was the best remedy for amebic dysentery. Success depends on the method. The injection must be made slowly and the patient should be rolled over so that the solution will reach all parts of the bowel.

Dr. Anders said that rest is an important element in the treatment of dysentery. For the success of the ipecac treatment especially absolute rest is necessary. In acute dysentery injections are not advisable as a rule, in chronic dysentery solutions of silver are the best remedy.

## Third Day—May 7th.

**The Sources and Manner of Typhoid Infection.**—Dr. W. H. Welch, of Baltimore, said that there is now no doubt that typhoid fever always comes from a preceding case of the disease. There is no longer any question of the origin *de novo* of the infection. If only sufficient care and time be devoted to the investigation every new case can be traced to a preceding case of the disease. The infection always occurs through the mouth by the ingestion of infectious material. The theory of respiratory infection as one mode of propagation of the disease long believed in is now definitely abandoned. Infection comes from the feces and urine of typhoid patients. This latter is a source of infection whose importance has only come to be realized in recent years. The infectiveness of both urine and stools, especially that of urine, may continue long after convalescence. This constitutes the important fact in the prophylaxis of typhoid fever. Directions must be given to patients and their enforcement insisted on so that infectious material will not be distributed in such a way as to cause the development of further cases of the disease. This is a difficult problem, but with our present knowledge of the disease by no means impossible, and even not very difficult if a united and determined effort is made.

**Prophylaxis of Typhoid Fever.**—Dr. John S. Fulton, of Baltimore, said that the most discouraging feature in the warfare with typhoid is the number of cases of the disease that escape diagnoses. During the Spanish-American war nearly one-half of the cases of typhoid fever that developed among the soldiers were diagnosed as something else. The army medical men represented at that time, not unreasonably, the profession of the country. With this fact before them it is not hard for medical men to understand the continued prevalence of typhoid fever. One of the sources of error is the acceptance of the opinion that malaria is responsible for most of the continued fevers in our warm regions. One army physician with a foreign accent and no prejudices in this matter made no such mistakes, reported all his cases typhoid and was correct. Perhaps it is not too much to say that two-thirds of the malaria, so-called, in this country, is typhoid. Osler's expression should be borne in mind. "After six to seven days of treatment with quinine when malaria is suspected, if there are no definite results then the fever should be considered to be typhoid, until some better diagnosis is made."

**Missed Diagnoses of Typhoid.**—These are most frequent at the extremes of life. Typhoid fever does not often occur after fifty years of age, but the mere fact of age is not enough to exclude the disease. In very early years, however, typhoid is by no means so infrequent as has been thought. It may occur under two years of age and in cities like Philadelphia where the chances for infection are frequent may rage among children with quite as much virulence as among the adult population. All sorts of queer names are adopted as a mask. Camp fever during the war. Some one has suggested New York fever for the continued fever of children that occurs in New York, but is according to one pediatrist not typhoid. Ithaca fever would be a good name for some cases of the disease, only under present circumstances it would be uncomfortably reminiscent.

(To be Continued.)

## SECTION ON SURGERY AND ANATOMY.

(Continued from Page 907.)

### THIRD DAY—MAY 7TH.

**Sunshine and Fresh Air in the Treatment of Tuberculosis of Bones and Joints.**—Dr. De Forest Willard, of Philadelphia, said that all these new agents which had sprung into prominence within the last few years could as yet be regarded only in the light of therapeutic assistance to the classic treatment of tuberculosis by rest and extension. He believed that all hospitals should be fitted with commodious solaria where the patients should be exposed in a condition of virtual nudity to the direct rays of the sun. It might be well to cover the affected parts with blue glass so as better to permit the passage of the actinic rays. Inasmuch as air was as necessary as light, open air life was as much indicated for these patients with tuberculosis of the hard parts as for those whose soft tissues were involved. He concluded that the actinic and the X-rays were at best only supplemental assistants to the mecanichal and general therapeutic measures usually employed.

**Congenital Dislocation of the Radius.**—Dr. Charles A. Powers, of Denver, said that the patient who was the subject of the communication was a boy of thirteen years in whom the left upper extremity had been from birth materially shorter than its fellow, the bones of the forearm being fixed in extreme pronation with inability to supinate. The elongated left radius was dislocated upward, forward and outward, lying on the outer and anterior aspect of the humerus. Photographs and X-ray pictures showed the condition. The author was able to gather but few similar cases from literature, and of these but two authentic instances had been subjected to operation. The first was by Langenbeck who in 1865 resected the entire elbow, the child dying some weeks after operation. The other case was operated upon by Bonnenberg, who resected 3 cm. of the upper end of the radius, subsequently doing a linear osteotomy at the lower end of the bone. The result showed but moderate improvement. Early amniotic compression seems to be the most probable theory regarding the causation of these deformities.

**Epithelioma Under the X-ray.**—In Preliminary Report of the Histological Changes.—Dr. J. C. Stewart, of Minneapolis, cited his findings in the case of a pronounced epithelioma of the back of the hand from which many specimens had been taken. He had them in the pathological exhibit. They showed some very interesting changes which accompanied the melting away of the growth. First and most marked was an extensive and progressive fatty degeneration which occurred in the nuclei and in the periphery of the cells in the neighborhood of the pearls. It is well known that these growths have very poor blood supply but as the fatty change progresses vascularization of parts begins to develop. At first these vessels are filled with red blood cells. Later their place is entirely taken by polymorphonuclear leucocytes. The necrotic changes associated with hyaline degeneration are progressive. Just before liquefaction occurs there is seen to develop a fine reticulum which fills with leucocytes. Clinically he observed that while the parts of the tumor which were subjected directly to the rays disappeared those portions which were covered with skin escaped and grew with alarming speed. This necessitated a radical operation.

Dr. H. A. Christian, of Boston, in opening the discussion cast some doubt upon the correctness of the interpretation of the pathological findings. He said that many substances besides fat stain with osmic acid, and he believed that the vessels seen marked the formation of granulation tissue rather than that they were created with a view to promoting phagocytosis.

Dr. Nichols, of Boston, said that the general trend now was to look with great caution upon the use of the X-rays because it had been shown that not only were they inefficient as curative agents in malignant cases but they were known actually to have produced genuine epitheliomata.

Dr. John Ridlon, of Chicago, looked with little faith on the future of any kind of rays as aids in the therapy of joint and bone tuberculosis.

Dr. F. B. Lund, of Boston, believed that the X-ray and the other forms of vibratory treatment were of no greater value in the treatment of malignant growths than so much old fashioned paste. They probably had done more harm than good in creating the false impression that they were curative and it was time to take up the knife again and cut these growths away freely and then to think of using the rays.

**Varix of the Inferior Mesenteric Vein Complicated by Chronic Ulcerative Colitis.**—Dr. John E. Summers, Jr., of Omaha, described a very pronounced case of chronic ulceration in which he had been fortunate in discovering, while endeavoring to operate for left inguinal colostomy, a prodigious varix of the vein and all its branches. Supposing that its etiology might lie in some malformation or growth in the posterior portion of the stomach or pancreas, he operated, and found nothing except slight drooping of the stomach. Thinking that this might possibly be a factor, he relieved it and incidentally did a Morrison operation as well. with a view to relieving portal circulation. This form of treatment did some good but it finally became necessary to do right inguinal colostomy and wash patient out. He gained twenty pounds in weight. The author desired to know if anybody could tell him whether the varix was due to pressure or to infection from the chronic ulceration.

**Acute Epiphysitis of the Head of the Femur.**—Dr. John P. Lord, of Omaha, said that the condition though rare was by no means infrequent and might under certain conditions be mistaken for a congenital dislocation in which there remained only a small knob where the head of the bone should be or for coxitis in which there had been pronounced absorption of the part. The history and duration of the case, the presence or absence of scars and the X-ray would easily prevent any such errors.

Dr. Ridlon, of Chicago, and Dr. Townsend, of New York, each advised a pulling down of the part which should be crowded into the acetabulum and fixed for years in abduction.

**Necessity for More Care in the Treatment of Skull Fractures.**—Dr. W. H. Earles, of Milwaukee, said that the general practitioner who frequently was called upon to treat these cases should be trained to a proper appreciation of their danger. He believed that the most important part of the treatment aside from the technic of removal of depressed bone and other products was the keeping of a thoroughly wet dressing on the part so that the cerebral spinal fluid might drain out freely, thus carrying with it whatever sepsis might have crept or been driven in. The moisture prevents the formation of scabs.

**Epispadias.**—Dr. J. B. Bullitt, of Louisville, reporting a case treated by a modification of Cantwell's operation, said that because of its ease of application and of the certainty of its results it was too bad that so valuable a contribution to the surgery of these parts should be neglected by the text-books. It consists simply in a free dissection of the misplaced urethra, in a separation of the corpora cavernosa and in a placing of the urethra in its normal position. He cited a case which had been almost entirely relieved in ten days of very distressing symptoms by this operation.

Dr. Parham, of New Orleans, in opening the discussion, said that Cantwell's operation had been successfully employed and somewhat modified in his city. If attention were given to carrying out the technic with care very perfect results might be had from it.

Dr. Fenner, of New Orleans, had noted with great surprise the ease with which the corpora cavernosa could be separated. He advised waiting until the tenth year and insisted that perineal drainage was indispensable to success.

Dr. Bullitt, in closing, said that the only difficult parts of the operation were in dissecting the mucous membrane from the glands; in separating the cavernous bodies far enough upward and in dealing with the urethra just at the point of abnormality.

**Cicatricial Anchylosis of the Jaws.**—Dr. Rudolph Matas, of New Orleans, said that while such conditions did not involve life they had a physiological as well as cosmetic standpoint. In a profoundly interesting case which came to him at the advanced age of twenty-seven years, he found himself face to face with the following apparently hopeless conditions; in infancy the man had suffered from continuous mercurial stomatitis which had gone on to the formation of cicatricial osseous anchylosis asosciated with micrognathism, or rudimentary development of the lower jaw and with vicious eruption of the permanent teeth of both jaws on a horizontal plane. He proceeded to the correction of the deformity by completely dividing the cicatricial tissues from the commisures of the mouth to the anterior border of the ramus of the jaw with suture of the skin to the gums, followed, after healing, by inversion of skin-flaps from the cheek into the mouth. As only partial relief was obtained, another plastic operation was performed in which a long pedunculated skin-flap was transplanted from the neck into the mouth to replace the lost mucosa. The functional recovery was good.

**Further Contribution to the Surgery of Undescended Testicle.**—Dr. Arthur D. Bevan, of Chicago, said that this condition was far more common than is usually supposed. Recent experimental work had convinced him that the testicle could live and develop without the assistance of the spermatic vessels. It was very fortunate that this was so because these structures were the agents which caused tension when efforts were made to take testicles from the body and place them in the scrotum. He wished to contribute this detail to the technic of his operation for the relief of sryptorchidism and felt sure that operators would have no difficulty in keeping the testicle within the scrotum without sewing it if they simply cut the spermatic vessels.

Dr. Rodman, of Philadelphia, said that he felt very grateful to Dr. Bevan for this important addition to his valuable technic because he thought it would be a means of preserving to many, if the operation were done at about the sixth year, not alone the developmental but the reproductive functions of the gland as well.

**Surgery of the Urinary Tract in the Female.**—Dr. J. B. Murphy, of Chicago, said that it was of great importance to know that we possessed four times the necessary amount of renal epithelium to keep us healthy. There is a very remarkable interrelationship between the two organs when a portion of one is cut away the other grows. When one becomes sarcomatous the other is sure to follow suit. In abscess of the parenchyma it is as wise and as necessary to treat this by free incision as anywhere else in the body. In these cases the capsule should be freely stripped to further relieve the tension. Hydro and pyonephrosis, the latter a sequel of the former, are merely symptoms of pathological conditions lower down. These are conveniently divided into three areas, namely the upper fifth of the ureter, the middle three fifths and its vesicular attachment. Cysts of the kidney it should be remembered are lined with epithelium. He advised free incision of the pelvis and stated that if properly sutured it would heal kindly.

Dr. Matas, in discussing this paper, said that in the surgery of the intestines the arteries and the kidneys Dr. Murphy had accomplished a wonderful amount. He himself believed in the great value of retrograde drainage which consisted in passing a catheter through the hole in the back, down the ureter to the outside.

Dr. Tinker, of Baltimore, said that Americans should be proud that their surgeons had removed the first kidney, the first stone and the first capsule.

Dr. Murphy, in closing, said that in the future he will remove both vesicular papillomata and calculi lodged in the wall of the bladder through an anterior colpotomy. He defended conservatism in the treatment of the kidney on the ground that about 40 per cent. of primary nephrectomies die, whereas if drained and subsequently removed the mortality is only 17 per cent.

**Tuberculosis of the Mammary Gland.**—Dr. A. H. Levings, of Milwaukee, said that the condition was commonly supposed to be a very rare one but that in all probability, if the facts were known, a good many breasts which are removed for supposed carcinoma are in reality tuberculous. They occur more frequently in women from the twenty-fifth to the thirtieth year and although usually secondary to a focus elsewhere they may be primary and are often retrograde, namely, against the lymph current. The gland is nodular but not usually much enlarged; the nipple being often so much retracted as to closely simulate carcinoma. He concluded that great care should be shown by every one prior to doing any operation upon the breast to make sure that the condition was not one of simple tuberculosis.

## Fourth Day—May 8th.

**Clinical Reports of Fractures of the Upper Third of the Femur.**—Dr. L. Sexton, of New Orleans, said that the use of plaster of Paris, particularly in children and in warm Southern climates, was very desirable. He said that a great mistake had been made in the past in not applying the plaster freely enough to the upper fragment, altogether too much attention having been given to the distal fragment. It was of no use, he said, to place a heavy cast upon the leg without carrying it well up toward the arm pits. He believed that for ease of application, for adaptability and for excellence of result, the plaster was better than any other dressing. He recommended very highly the application of the plaster to the part so soon as diagnosis might be established.

Dr. Grant, of Denver, said that he would hesitate to apply plaster immediately because of the danger from subsequent swelling.

Dr. Brandon, of Tennessee, advocated a simple and practical splint for children which was made on somewhat the principle of the three-angle chair, which gives such excellent results in certain types of adult cases.

Dr. J. W. Draper Maury, of New York, reported having made some experiments with the use of dextrine as an adjuvant to the ordinary plaster of Paris. It was useful and seemed for some reasons more practical than the so-called "glass" dressing to which the previous speakers had alluded. It was the material which decorators used in their mural work, and although he had recently found that Velpeau had spoken of its use very favorably, of late years it seemed to have fallen into disuse. A convenient and practical way of utilizing this material was to add ten per cent. of it by volume to the plaster of Paris, which, after thorough mixing, was incorporated as usual in the crinoline. Clinical experience showed that such dressings would dry very much too slowly for practical use unless heated. A convenient means of accomplishing this was by the use of an ordinary painter's gasoline lamp, which made an intense heat but which was perfectly safe to use on a patient who was conscious. For spondylitis jackets and for ambulatory casts for lesions of the lower extremities this dressing was exceedingly useful. The primary cast should be made in the ordinary way and then dried with a torch, then apply the dextrine bandages, about one or two thicknesses of crinoline being sufficient. The porosity of such a cast is diminished, but not so much so as to interfere with the patient's comfort at all. Plaster jackets made in this way and used with care can be counted upon to last upward of a year, and because of their almost adamantine hardness fenestræ can be cut of liberal size and at frequent intervals.

**The Closure of Wounds.**—Dr. Miles W. Porter, of Indiana, said that the present methods of wound closure were by no means satisfactory; that he had worked for a long time in the hope of perfecting the use of adhesive strips in place of sutures and he presented a long series of cases which seemed to show very satisfactorily that he had achieved his goal. He said there were three things much to be desired in coaptation, *viz.*, sufficient drainage, adequate junction of homologous parts and absence of traumatism. Largely because of the compatability of perfect drainage with perfect coaptation in using adhesive plaster strips, very excellent results can be obtained by this method if they are properly applied. One of the most important points in the technic should be to adjust a good-sized and hard-rolled mass of gauze along the outer margins of the wound. When the plaster passed over them, these should be instrumental in obliterating dead spaces. His results had been eminently satisfactory even in the closure of long abdominal wounds. He specified particularly, however, that the technic was not applicable in the presence of infection or of much tension.

Dr. Morton, of California, in discussing this paper, said that it was the abdominal fasciæ which held the viseral contents in place. He could not understand how any number of strips, no matter what might be their mode of application nor how many rolls of gauze might be applied, could coapt these very important structures. It seemed to him that the limits of the technic were reached when it was employed as it might well be, in the dressing of extremity wounds, particularly those following amputation.

**Operative Treatment of Exophthalmic Goiter.**—Dr. T. C. Witherspoon, of St. Louis, reported nine cases, and from them drew the following important deductions: Jonnesco's operation, which consisted in the removal of the upper and middle cervical sympathetic ganglia, he had used in his first case but partly because of its unsatisfactory outcome, partly on account of the unpromising reports from others, the remaining eight cases had been subjected to the older operation of thyroidal hemisection. Unfortunately we knew so little of the pathology of this condition that it was most difficult not only to answer the question "When shall we operate?" but "How shall we operate?" Histories of all the cases of Graves' disease which have been treated medically were unanimous in showing that the disorder under medical treatment was characterized by a gradual, progressively fatal termination. Medicine, it was true, could do something to prolong the life of the patient, and there were times when these cases seemed to be improving, but they invariably retrograded. Thus it seemed that in all probability it was truly a surgical condition. He detailed the technic as follows: He would make almost without exception an anterior incision along the sternomastoid rather than the transverse incision recommended by Kocher. He then splits the capsule and the deep fascia of the neck, lifting the tumor forward and entering the space between it and its capsule from behind. In this way he avoids the recurrent laryngeal nerve and is able more efficiently and speedily to secure the interior thyroid arteries. There was very little difficulty, he said, in grasping the superior vessel, but the ligation of the inferior was often a matter of difficulty. In his experience the isthmus, so often spoken of as carrying a dangerous blood supply, had given very little trouble.

Dr. Grant, of Denver, agreed with the speaker that the capsules should always be opened as a preliminary to tying off blood supplies, because fatal hemorrhage in these cases was not necessarily extensive, particularly if the hemoglobin was diminished and the heart action more than usually impaired, he found it very desirable to build these patients up by absolute rest in bed and by the exhibition of strychnine for at least a week prior to operating upon them.

Dr. Rixford, of California, said that these cases presented very grave problems because, as had already been stated, so little is known of their pathology. At the present moment, however, there is recognized what seems to be two separate etiological factors. One class of cases is due to some functional derangement of the thyroid glands, the other to an unbalancing of the sympathetic system. One might later on be able to distinguish the two conditions apart. At present this could not be done, but they are treated without due regard to their etiologies. Naturally those cases due to sympathetic degeneration, if such existed, would respond to Jonnesco's operation, whereas those in which the gland primarily was effected would be uninfluenced by it and must be treated by its hemisection. He had found these cases most dangerous to operate upon because of their extremely low vitality, of the readiness of absorption of antiseptics through their skins and of their extraordinary susceptibility to sepsis. He specially urged the importance of opening the capsule and of working from behind forward, to recognize and to avoid the recurrent laryngeal nerve.

Dr. Horsely, of Texas, said that no one had as yet differentiated the two types, because of the lack of pathological information on the subject. He had done a Jonnesco operation with immediate improvement. This, however, was not lasting and had recently gone on to a fatal termination. A study of the literature had convinced him that there was a possibility of our having become over sanguine in the matter just as we had over trepining for epilepsy, the improvement in these cases being a temporary one due only to the shock of a very severe operation.

Dr. Rixford, in closing, said that the certain indication for operation in these cases was failure of internal medicine to limit the disease. Inasmuch as all cases suffered somewhat from the administration of general anesthesia and since it was fatal to some, he recommended most strongly the use of local anesthetics.

**Subcutaneous Injection of Paraffin for Deformities of the Nose.**—Dr. G. F. Connell, of Colorado, said that certain objections had been raised on this technic, prominent among which were toxic absorption, pressure necrosis, which might result from too much heat or tension; the failure to correct the deformity by the use of too little or too much paraffin; air and paraffin embolism. He reported a number of cases in which none of these difficulties had presented themselves and from which he deduced the following conclusions: The preparation of the patient for this minor operation should be as carefully done as for major work; the anesthetic which he had employed was one per cent. eucaine. It seemed to him desirable to have a screw attached to the piston of the injecting syringe by which the paraffin might be fed in with greater accuracy than otherwise. He accredited Dr. J. Leonard Corning, of New York, with having been the first to prove that the injection of non-absorbable oils was harmless. He believed the method was still in an experimental stage, but that the use of paraffin would become much wider as its main advantages became known. He thought it desirable to inject too little rather than too much into a given area because more might be added later.

Dr. Morton, of California, advised the introduction of paraffin at about 109° F. He had found sperm oil a very useful medium with which to hold a glass syringe at this even temperature. He disagreed with the writer who had limited the amount to be introduced by purely empiric grounds, stating that the only condition which should limit the quantity of paraffin one might safely introduce was the tension. He showed a beautiful series of sections which had been removed from the nose of a patient at intervals of one month. These sections showed that the paraffin was gradually absorbed, its place being taken by connective tissue. In other words he deduced that the paraffin played the part of a clot of blood extravasated in the tissues and subsequently underwent organization. There could be no doubt in the minds of those who saw his beautiful microphotographs that this process really did take place.

Dr. W. J. Mayo, of Minnesota, said that in order to avoid dangerous tension which could always be recognized by the whitening of the tissues, it was often desirable to cut them subcutaneously with a cataract knife, or to stretch them, as had been suggested by MacDonald, by the introduction of hot salt solution under great tension, which injection might, if necessary, be repeated several times before the paraffin was introduced.

**Abscess of the Spleen.**—Dr. W. M. Spear, of Rockland, Maine, cited a case which he had successfully diagnosed and treated. The condition literature showed not to be infrequent; an autopsy would undoubtedly prove the presence of many cases now incorrectly diagnosed as perishing from sepsis. They usually give a history of some infectious disease, particularly of typhoid or malaria. They were characterized by the presence of profound anemia and of pain. He said that on account of the hemorrhagic character of the spleen, removal of the organ rather than drainage, seemed to be necessitated.

**The Choice of Anesthetics.**—Dr. E. J. Mellish, of Texas, said that the exclusive use of any one anesthetic was never justifiable. This, however, presupposed the presence in the operating room of a specially trained anesthetist who was capable of making such choice. Anemia of a degree below 50 per cent. of whatever cause was undoubtedly one of the most important indications and guides in this matter. Inasmuch as ether was a respiratory rather than a cardiac depressant, it was indicated in all the anemias rather than chloroform, which was known to destroy a certain number of red cells as well as to be a marked cardiac depressant. Gas, however, or gas and oxygen was the ideal anesthetic, but in order to use it for prolonged operations, it required the services of an experienced anesthetist. Ethyl bromide and chloride were likewise useful for certain operations, but because of the fleeting character of the anesthesia they could be used only for minor work. As regards vomiting, he said that compression of the phrenic would often inhibit this during the operation and that since ether was disposed of by the patient largely through the mucous membrane of the stomach, water, which is an excellent solvent of the gas, should be given very freely up to the time of operation and immediately after it. The stomach should be washed out unless the patient could drink freely without increasing the nausea. Free rectal irrigation with salt solution almost always stopped the vomiting in a reasonable time. He concluded by saying that ether was dangerous in arterial sclerosis; chloroform in anemia and myocarditis.

Dr. Moore, of Minnesota, took exception to the author's statement that one anesthetic should not be used to the exclusion of all others, since for the past twenty years he had employed chloroform in 95 per cent. of his cases. In all that time he had had no deaths. He contended that it was not the drug which was dangerous, but the unskilful anesthetist.

Dr. Tinker, of Baltimore, said that it seemed to him enough space had not been given to local anesthesia, its adaptability and extraordinary safety. For its successful employment he deemed three points necessary, *viz.*, that the patient should desire the operation to be done by this method; that the utmost care should be employed in the administration of the infiltration and that no one should attempt it who did not possess an intimate knowledge of the position of the main nerve trunks which should be injected with one per cent. cocaine. The third point which he emphasized consisted in the use of morphine, one-sixth of a grain being advised one hour before operation, one-sixth at the beginning and one-sixth during its completion. It was of importance that the anesthetist should be a man whose personality was such as to divert the patient's attention.

Dr. Ochsner, of Chicago, said that a very important point in the treatment of patients suffering from chloroform poisoning consisted in violently compressing the chest a number of times before raising the arms to begin artificial respiration. This, he said, was usually the first thing on the program and by its employment all the collection of chloroform contained in the bronchi and trachea was driven out into the pulmonary lobules and at once taken up by the circulation. It was evident, therefore, that the first thing accomplished by the usual technic was to give the patient, already poisoned by the drug, an additional dose of it.

## SECTION ON OBSTETRICS AND DISEASES OF WOMEN.

(Continued from Page 910.)

Third Day—May 7th.

**Sarcomatous Degeneration of Myomata.**—Dr. T. S. Cullen, of Baltimore, said sarcomata might develop into a submucus, intermurial and subperitoneal myomata contrary to the accepted idea. These tumors may be derived from both the connective tissue and the muscle fibers. Two varieties are met with which could come from the muscle, viz., the spindle and the round celled. Some cases were so obscure in their structure that it was practically impossible to trace the development of the myoma from any particular one of these tissues. One might recognize these cases clinically but not in many instances, for operators had so long been accustomed to regard these tumors as benign that the proper examination of them was often not made microscopically, and the diagnosis rested on the macroscopic appearance alone. These tumors would grow very rapidly in the presence of fibroids and often after operation not two months had passed before recurrence had taken place and the whole pelvic cavity was filled with the newly formed tissue. In the author's opinion it is most decidedly inadvisable to split myomatous uteri, inasmuch as they may have undergone sarcomatous degeneration. Of course this condition was not a very common one, as it had not been demonstrated in more than three per cent., but this amount was sufficient to warn the operator against splitting the uterus and rendering the patient liable to subsequent return of sarcomatous tumors. In every case of hysteromyomectomy it will be advisable to have an asistant open the uterus immediately upon its removal to determine if carcinoma of the body exists or to find out whether the myoma had become sarcomatous. If malignancy was detected the cervix can thus be removed without delay.

Dr. Clark, in discussing this paper, thought that it evidenced an increase in the indication for radical treatment in myomata. He did not know how far one dared to preserve the uterus now that Dr. Cullen's work had been done.

Dr. Dunning said that the work of the speaker merited much commendation both for the thoroughness with which it had been done and because it showed that the present idea of the harmlessness of myomata was radically incorrect. He would like to know in what percentage of cases Dr. Cullen had found sarcomatous degeneration of myoma to be present.

Dr. Cullen said, in closing the discussion, that the exact percentage was not known, but thought it was between one and a half and two per cent. Early operation on myomata was advocated because of the present knowledge of the possibility of a sarcomatous degeneration. That the condition of the tube as to whether it had been inflamed or not was an important point to notice in myomata. Where the tube was not patent it was possible that myomectomy was contraindicated and complete ablation of the uterus should be practised.

**Ectopic Gestation.**—Dr. O. G. Pfaff, of Indianapolis, said that although many cases had been assigned for the presence of an extra-uterine pregnancy there is still another which, in his opinion, is worthy of serious consideration. Great many cases of tubal pregnancy have occrred where there had been previous infection of the tubes, but in a few others no previous infection had existed. A possible factor in the causation of tubal pregnancy might result from the loss of the peristaltic function of the tube in carrying the ovum from the ovary to the uterine cavity and by loss of this function the ovum would be arrested in the tube and there become impregnated. The tube was in reality an excretory canal just the same as the ureter and gall-ducts, both of which possess the power of peristalsis. The ciliated epithelium of the tube did not always possess the property of sending forward the ovum on its journey to the uterine cavity; that it was perhaps simply a velvety bed on which the ovum might lie while it was carried forward to the uterus by the peristaltic action of the tube. In a case of the author's where the tube had become bound down peristalsis could not take place during ovulation and had a tubal pregnancy resulted.

Dr. J. H. Carstens, of Detroit, said that one of nature's methods to prevent tubal abortion was to cause adhesions of the tube to the rectum bladder and pelvic wall so that it was impossible for the contents of the impregnated tube to escape into the abdominal cavity. This speaker did not put much faith in the peristaltic action of the tube as a factor in tubal pregnancy but thought it was worthy of further investigation; that usually writers had ascribed as the cause of tubal pregnancy some malformation in the tube which obstructs the passage of the ovum into the uterine cavity.

Dr. Wagner, of St. Louis, said that the ordinary cause of uterine pregnancy was now commonly laid down to the presence of secondary fimbria or diverticuli.

Dr. Dudley remarked that it was known that many women have become pregnant when the tube was bound down by adhesions. That the cilia played a more important part than was at present conceded to it. The dynamic force of the diaphragm plays an important rôle in the movement of the ovum from the ovary to the uterus.

Dr. Pfaff said, in closing, that tubal pregnancy may take place also in uncomplicated, healthy tubes.

**Non-Absorbent Gauze the Proper Material for Tamponage in Uterine Hemorrhage.**—Dr. R. W. Holmes, of Chicago, presented this paper. The original gauze of Lister was non-absorbent, but somehow or other it had fallen into disuse and disfavor so that to-day almost every obstetrician had discarded it for the absorbent variety for packing the uteri in post-partum hemorrhage. The capillarity of non-absorbent gauze was one sixth with water as that of absorbent gauze. Various substances, such as gelatin, paraffin, celloidin, were used to render gauze non-absorbent. Paraffin, when used in this way, delayed coagulation, hence gauze prepared with it was of little value for the purpose under consideration. The writer had used gelatine gauze on several occasions with perfectly satisfactory results. Any styptic substance might be incorporated in the gauze provided it would not undergo a change when coming in contact with the antiseptic substance which was used to sterilize the gauze.

Dr. C. S. Bacon, of Chicago, held that absorbent and not non-absorbent gauze was capable of permitting drainage. If drainage were desired some sort of wicking should be employed. The important point was not whether the gauze was absorbent or non-absorbent but was the impregnation of the gauze with the hemostatic. The fundamental object in the treatment of post-partum hemorrhage was the stimulation of the uterine contraction and coagulation of the blood.

Dr. W. P. Manton, of Detroit, said that for many years he had used an absorbent gauze and that it had in every instance answered every purpose because it permitted absorption of blood into its meshes and thereby assisted in the coagulation of the blood in the uterine veins and arteries.

Dr. Effie Davis, of Chicago, thought that in almost every instance the trouble lay not in the treatment of post-partum hemorrhage but in neglect of a proper prophylaxis.

Dr. Holmes said that the discussion had gone wide of the mark, in that it was not a question in his paper as to the prevention of post-partum hemorrhage but rather that a suitable non-absorbent gauze might be found to check the post-partum hemorrhage after it had begun.

**Acute General Staphylococcic Infection Through the Puerperal Breast.**—Dr. W. P. Manton, of Detroit, said a careful search of literature had failed to reveal a single case similar to that which the author here recorded. The author realized that the modern practitioner was fully aware of the necessity of a proper antiseptic precaution in the treatment by massage of cases of engorged breasts. Normally human milk contained pus-forming organism. The object of the author's paper was to call the attention of the profession to the possibility of a general infection resulting from improper massage of the breasts after delivery, especially where the diagnosis had not previously been made between simple physiological turgescence and a beginning infection of the breasts. In the author's case abscess formation had taken place not only in the breast but shortly after these had appeared metastatic abscesses had appeared on the back, side and extremities of the patient. Reports from cultures taken from the uterine cavity were negative in two instances. An examination of the blood for the presence of bacteria was positive. Distention and turgescence of the breast caused no trouble in the larger majority of cases and could easily be treated by means other than massage. Where massage was employed it should be done with the utmost care and precaution and gentleness.

Dr. R. A. Jaimeson, of Detroit, said that in a very large experience extending over many years he had never seen a similar case.

Dr. Bacon insisted that a proper diagnosis could be made between beginning lactation and infection. The latter should not be difficult because temperature was almost invariably present along with the other signs and symptoms of the beginning sepsis. Massage of the breast was not necessary in the majority of cases. That the methods of massage taught and advocated in text-books and by teachers, were totally in variance with the massage employed in other portions of the body. In using this procedure the massage should be done away from the breast toward the axillary and subclavian vessel; that he could reduce the turgescence in a breast without removing from it more than a few drops of milk.

Dr. Manton said, in closing, that general infection would be found to be much more common than was generally supposed.

**Technic of Cataphoric Sterilization in Cancer of the Cervix Uteri.**—Dr. G. B. Massey, of Philadelphia, said a large proportion of failures were due to the improper use of the knife in these cases because through careless handling of the tissues secondary deposits were caused in the cut edges of the wound. This could be easily prevented by the employment of the thermo-cautery and other scarifying knives. Of late he had been experimenting with a new electrical method to produce cataphoresis into the tissue of the nascent salt of mercury. Ordinarily in a cervical cancer of average size the employment of five to six hundred milleampères is sufficient to destroy the growth after a period of exposure varying in time from a half hour to an hour or more. Even though the tissue may not be totally rid the invading cancer cells, there would be an alleviation of the pain, discomfort and odor. The slough which was caused by the cauterizing knife usually came away after ten days or two weeks. He had now come to the conclusion that he could obtain much better results by the combination of the salts of mercury and zinc and had discarded the electrode of gold covered with mercury, as the mercury was too rapidly absorbed in the presence of the gold metal.

Dr. Hayden, of Indiana, said that he felt sure that a great many of the so-called inoperable cases would be much benefited by this procedure and that he wondered why after so many years of intelligent work Dr. Massey's investigations had not received more attention by the profession at large.

Dr. Moody, of Alabama ,acquiesced in the statements of the latter gentleman and said that he had tried it in three cases without success, but thought that his failures might have been due to improper technic, that he had decided in view of his many failures to cure this condition, by the cutting operation, to give Dr. Massey's method further trial. Anyhow, he was assured that the symptoms would be markedly relieved by the use of this method.

Dr. Massey, in closing, said that he had had but one absolute success by this method, although he had tried it in seven cases, the six unsuccessful cases were recurrent cancers, many of which he had relieved of pain and the disagreeable odor so common with them. One case which he had treated succumbed after six days to septic peritonitis.

**Exploratory Vaginal Puncture and Celiotomy in the Diagnosis of Diseases of Female Genital Organs.**—Dr. C. V. Theinhaus, of Milwaukee, said very many patients came to the practitioner in whom the exact diagnosis was doubtful even after an examination had been made. There were two varieties of cases presenting tumors. one where the tumor was hard, the other, where the tumor was soft. The solid tumors were either fibroids or malignant growths. In the soft variety diagnosis had to be made between long standing accumulation of pus, cysts, and extra-uterine pregnancy. Of course where there was pus one might have a slight rise of temperature in the afternoon. In every case where the diagnosis was doubtful exploratory vaginal puncture should be done. Operations of this kind were first reported by Dr. Summers, of New York.

Dr. Stacey, of Texas, thought that the procedure was a very helpful one and could be of great service to the occasional operator who was not always prepared to do a major operation on the spur of the moment.

Dr. Craig, of Boston, said that the occasional operator was not justified in undertaking an operation where it was possible for him to secure the services of the surgeon who was continually operating; that if the pus was deep-seated he doubted the advisability of doing a vaginal drainage but thought that abdominal drainage was here clearly indicated.

Dr. Theinhaus said, in closing, that surgeons had long since come to the conclusion that it was worse than foolhardy to atempt to drain pus through the abdominal wall. Vaginal drainage should always be employed.

**Conservative Surgery of the Sclerotic Ovary.**—Dr. H. O. Pantzer, of Indianapolis, said the profession had long since determined that sclerotic ovaries should be removed, but he was convinced that many of the subjective symptoms might be relieved by the employment of conservatism. He reported a case of sclerotic ovaries where there was a seeming sterility after marital relations had existed for several years. The speaker had removed one ovary and had done a plastic operation upon the other with the result that after something over two years the patient had become pregnant, gone on to full term, and had been delivered of a nine-pound child.

(To be Continued.)

## CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

*Held at Washington, D. C., May 12 to 14, 1903.*

(Continued from Page 948.)

### Second General Session—May 13th.

The President of the Congress, W. W. Keen, M.D., of Philadelphia, in the Chair.

**Diagnosis of Diseases of the Biliary Tract.**—Dr. John H. Musser, of Philadelphia, said that diseases of the biliary passages had passed through nearly the same phases of medical and surgical history in recent years as the appendix. As for the appendix, it is now realized that the important thing is diagnosis of serious pathological conditions as early as possible and operation as soon as they are recognized, depending, of course, on the acuity of symptoms in the general condition. Physicians as a rule do not see the primary effects of affections of the biliary passages, but the secondary complications, hence the difficulty of diagnosis. The primary pathological conditions are due to gall-stones, inflammatory conditions and parasites. Dr. Musser would enter a plea for the early recognition of primary states of the gall-tract and careful revision of the diagnosis after the first acute symptoms have passed with the idea of obtaining assurance. For this diagnosis laboratory methods are of great importance.

**Significance of Ordinary Symptoms.**—If after several weeks a patient is still suffering from jaundice, for which no good reason can be ascertained, then observation must be carefully made for a time and followed by exploratory laparotomy rather than allow the condition to become inveterate. Simple catarrhal cholangitis is becoming ever a rarer diagnosis because physicians recognize that affections of the biliary passages are usually due to infections. Needless to say an infective process must always be watched carefully. True suppurative cholangitis is always accompanied by fever, not with the regular curve, but of angular and sudden character. There is usually a history of preceding gall-stones or of parasites. Boas's point of tenderness must not be forgotten, that is, with abscess in the gall-bladder there is a tender spot in the neighborhood of the twelfth dorsal vertebra. This observation of the German clinician has been confirmed by Dr. Musser.

**Cholecystitis.**—This may be due to acute catarrh, but may come on very sudden, with severe pains, nausea and prostration, especially after exposure or excess in eating and drinking. Dr. Musser has recently had a case in which operation was necessary on the fourth day, in which there were no gall-stones and no pus, but only great inflammatory edema of the gall-bladder, and the presence in it of a very acrid irritant fluid which caused the severe toxemia. Despite the absence of jaundice the symptoms were very intense and operation was evidently needed. The tension on the gall-bladder might easily have resulted in pressure, ulceration with perforation and general peritonitis.

**Differential Diagnosis.**—The important symptom of gall-bladder disease is pain and tenderness in the right upper quadrant of the abdomen. There are certain other conditions that must be remembered, however, in order to get a definite appreciation of the significance of this symptom. Subdiaphragmatic abscess may cause similar symptoms, as may also pleurisy and at times pneumonia when it presents abdominal symptoms. One of the things that must be remembered in this regard is appendicitis. Occasionally when the end of the appendix points toward the liver, it may, in inflammatory conditions, form adhesions to the gall-bladder or may be the origin of an abscess in this region. As both biliary conditions and appendicitis require operation a mistake is not important. In certain cases uremia may simulate an attack of inflammation in the biliary region because of tenderness of the kidney. This is not generally known and may give rise to even fatal advice as regards operation.

**Progress of Gall-bladder Surgery.**—Dr. George E. Brewer, of New York, said that the present generation of surgeons has passed through three stages of gall-stone surgery. First, neglect; second, operations for late sequelæ of the disease, and third, the present stage of radical and really curative operations as early as possible in the case in order to avoid secondary complications. Operations on the female pelvis on the kidney and on the appendix have passed through the same stages. Early diagnosis is the most important element in the case. The symptoms may, however, be but very slight. Gall-stones, for instance, present no symptoms in about 90 per cent. of the cases, but may at almost any time light up an inflammatory process that will cause anything from slight jaundice to fatal perforative peritonitis. Occasionally gall-stones may be felt to grate beneath the fingers on careful palpation. Dr. Brewer once felt a very large stone through a very lax abdominal wall. The discomfort due to the presence of gall-stones, it must be remembered, is often called gastralgia.

**Differential Elements.**—Acute paroxysmal pains in the right upper part of the abdomen will, in 97 cases out of 100, be due to gall-stones. In two of the cases the cause will be ulcer of the stomach and in one spasm of the pylorus. Jaundice is the most frequent symptom of gall-stones. It may be produced without pain. It may be intermittent, yet due to the presence of a stone which, becoming impacted at the papilla, causes enlargement of the ducts behind it, and then is sometimes floated up allowing the escape of bile and sometimes drops back, closing the opening once more. The pain is important, especially if it occurs in the upper right epigastric region, when the patient is fasting, and if it comes on at night and is distinguished by a distinct tender point. Tumor is an important symptom, but is much rarer. A tense gall-bladder may cause a very hard feeling without there necessarily being any malignant disease. Gall-stones, it must be remembered, are rare under twenty years of age. With regard to the fever that so often accompanies gall-stones the most important thing is the angularity of the fever curve.

**Lymph Gland Enlargement and Jaundice.**—Dr. Brewer said that there are three lymph glands situated at various points between the gall-bladder and the termination of the common duct, the enlargement of which may cause jaundice and other symptoms simulating stone. These three lymph nodes may become enlarged as the result of cancer in neighboring regions, and in this case the symptoms due to them are not likely to be relieved. They may become enlarged, however, from infectious diseases and relief be afforded after the passage of the infection. Dr. Brewer recently saw a case of Hodgkin's disease in which the enlargement of these nodes was thought to be due to cancer and caused all the symptoms of malignant stoppage of the bile passages.

**Bacterial Origin of Gall-stones.**—Dr. C. A. Herter, of New York, said that it is now generally admitted that gall-stones are of bacterial origin. They are composed of two principal materials, cholesterin and bilirubin. Cholesterin is a monatomic alcohol forming one-tenth of one per cent. of the bile. It is derived from the blood and was thought to be increased by inspissation of the bile. This viscidity is now known to be due to mucous. Cholesterin is really a product of the epithelial cells of the gall-bladder, and is actually increased during the stay of bile in that viscus. In health not much cholesterin is secreted, but in disease there is an increase in this function. This may be very significant in the production of gall-stones. Herter tried experimentally to increase the cholesterin by producing irritations of the gall-bladder. Bichloride of mercury, carbolic acid and ricin did cause a very large increase of cholesterin in the bile. Abrin and diphtheria toxin produce no such results, however.

**Blood Origin of Cholesterin.**—During the resolution of pneumonia, because of hemolytic processes, there is more cholesterin present in the blood and more can be found in the bile. If cholesterin is directly injected into the economy, however, no such increase in the substance in the bile can be found. Naunyn argues that the cholesterin of the blood has no effect on bile cholesterin. The calcium salts are important in the bile. If calcium is deficient bilirubin is precipitated and, as is well known, this often forms a nucleus for gall-stones. Layers of cholesterin being deposited around the bilirubin nucleus. It is now well known that colon and typhoid bacilli are often found in gall-stones. Welch showed that streptococci and colon bacilli were often in the centers of gall-stones. Gall-stones have been produced artificially by the injection of microbes into the gall-bladders of animals. Gilbert and Mignot showed that for this purpose the microbes introduced must not be too virulent, that is, attenuated cultures must be used and they must be kept in the gall-bladder. The main protective feature of the gall-bladder is the possibility of emptying itself readily, which takes out of it foreign products.

**Constitutional Origin of Gall-stones.**—Dr. Herter has proved in his laboratory by experiments on dogs that gall-stones, at least of small size, may be produced by bringing about changes in the metabolism of the animals by unsuitable food. If an almost exclusive diet of fats be given to dogs with very little proteid material, minute masses of bilirubin calcium are deposited in the gall-bladder, these might well form the basis of true gall-stone formation. These experiments are worth following up. So far microbes have been made to play perhaps too important a rôle in gall-stone formation and now the constitutional condition must come in for its share of study in their etiology.

**Gall-stones and Stomach Diseases.**—Professor Ewald, of Berlin, Germany, discusses the diseases of the gall-bladder and the bile duct with special reference to diseases of the stomach and intestines. He said that many infections of the intestines particularly are known to invade the gall-bladder. Chiari showed that in 20 typhoid fever cases that came to autopsy 19 had typhoid bacilli in their gall-bladders. Welch showed that bacteria from the blood as well as from the intestine might invade the gall-gladder and cause gall-stone formation. Other irritants are not likely to encourage the formation of gall-stones as cirrhosis of the liver, due to alcohol, is not usually associated with gall-stones. Certain symptoms of stomach and intestinal diseases are similar to those of the biliary tract. Among these colic is one of the most important. Biliary colic is due to contraction and spasm of the bile duct. Inflammatory swelling causes burning continuous pain but not spasmodic pain.

**Differential Diagnosis.**—The important symptoms of gall-stone disease are colic icterus and tumor. These are seldom all in the one case. Tenderness pain and even swelling may occur in connection with attacks of appendicitis and the tip of the appendix is in the liver region. Painful affections of the stomach and pancreas are hard to differentiate. Chemical examination of the stomach contents is often of great help. Ulcer of the stomach is not unlikely to be mistaken for gall-stones and hyperacidity and an increase of hydrochloric acid speaks rather for gastric ulcer. Pancreatic disease is likely to be associated with glycosuria, fatty stools and the presence of muscular fibers. Tumor is more frequently absent than present and does not occur in more than 15 per cent. of the cases. The gall-bladder contracts about the stone instead of becoming distended. Aspiration for diagnostic purposes is dangerous and may lead to infection of the peritoneum. It should not be undertaken unless the patient is ready for operation.

**Experience in Gall-bladder Surgery.**—Dr. William J. Mayo related the results of his experience in 534 operations upon the biliary passages. He insisted on the necessity for operation as early as possible after the first acute symptoms have subsided. In advanced cases, adhesions, infections and other pathological conditions have developed. At times it is necessary to operate several times and in these cases the prognosis of repeated operations is rather good. In fourteen cases patients were cured by a second operation and in two cases the symptoms were entirely relieved only after several operations. Dr. Mayo uses a catgut drain which is absorbed before it is necessary to take it out and thus prevents the tendency to weakness of the abdominal wall at this point that may be followed by rupture. In patients who have suffered for a long time from jaundice and whose blood shows an absence of tendency to coagulation the calcium salts are given very freely for a week before operation.

**Prognosis of Malignant Growths.**—Malignant neoplasms of the biliary passages were found in 24 cases. There were four of these in the gall-bladder for every one in the duct. In five operation was deemed advisable, even though portions of the liver had to be removed with the cancer. Three of these patients are alive, one of them for more than two years, though unfortunately there is a local recurrence which will probably soon lead to a fatal termination. It is evident that these cases of malignant disease in the biliary tract are not so hopeless as has been thought.

**Surgery of the Common Bile Duct for Stone or Tumor.**—Professor Hans Kehr, of Halberstadt, Germany, said that his experience with 800 laparotomies for biliary disease had given him a certain right to speak on this subject and yet he felt the limitations of his knowledge and was glad to think that he had the advantage of hearing the opinions of Americans, since so much had been accomplished for gall-stone surgery in this country. Gall-stones are in most cases absolutely latent. When they do give symptoms not infrequently they are those of acute obstruction. For this the treatment is medical not surgical. Hot applications should be employed, vomiting should be encouraged, nature should be assisted in every way to overcome the acute condition. The stools should be carefully searched for calculi, though the passage of a calculus does not necessarily mean that others are not present to produce further symptoms. After the attack is over, even though gall-stones have been found in the stools, if no tenderness remains and if the jaundice disappears completely there is no indication for operation. Professor Kehr is not one of those who believes in the use of the knife unless there are absolute indications and though a number of such cases have been sent to him he has uniformly refused to operate, unless there has been a recurrence of symptoms.

**Necessity for Operation.**—Physicians need to be impressed with the idea that operations should be done early in these cases. If they are allowed to progress with recurring attacks, though each attack may not be very severe, or at least not appear dangerous, complications are constantly developing. Spontaneous cure is not impossible but it is very rare and should not be waited for. Cure is capricious and much more dangerous than operation. Dr. Kehr has lost less than 3 per cent. of his cases where there was no pus and no cancer. As 80 per cent. of these cases, when left untreated, succumb to their biliary affections sooner or later, even a much higher mortality would still justify operation.

**Masking of Symptoms.**—Patients suffering from gall-stones in Europe are usually sent to Carlsbad. Here the symptoms are relieved though the stone is not washed out. The inflammation is reduced and the pain ceases for a time. This has tempted many patients to keep putting off operation. After the first acute attack, if there is a recurrence, it constitutes a strict indicaion for operation which must not be postponed too long. Carlsbad masks the symptoms of gall-stones somewhat as morphine does those of appendicitis.

**Choledochtripsy.**—Professor Kehr does not believe in the fragmentation of stones within the duct by crushing or by needling. The fragments thus created may not pass through the orifice; all of them may not be carried out, recurrences are frequent, injuries to the tissues are likely. Whether voluntary or accidental, the crushing of the stones should be avoided. If a sufficiently large incision is made it is possible to get through the adhesions and perform the operation at one sitting. Dr. Kehr cannot imagine conditions in which two sittings would be necessary. When the stone is at the papilla, papillotomy through duodenostomy may be necessary. At times it may be necessary to go through pancreatic tissue. Packing is important in these wounds. To close without packing means a much higher mortality. If a carcinoma of the duct exists and is small, a radical operation should be done. The internal medicine men should go to school to the surgeon in this matter. If recurrence is found after the first attack, a surgeon must be appealed to.

In opening the discussion, Dr. Frank Billings, of Chicago, said that the pain of gall-stones is not necessarily severe and that for this reason cases are sometimes mistaken. As a rule, however, there is a distinct tenderness on manipulation and this is reflected toward the epigastrium. In one case operated upon for supposed gall-stones the condition proved to be the gastric crises of locomotor ataxia. Floating kidney may occasionally give pain and tenderness simulating gall-stones, especially when accompanied by nausea. As a rule gall-stones give no symptoms until infection has taken place. As soon as the diagnosis of gall-stones is made, the case becomes surgical and not medical.

Dr. Dock said that it is very easy for the medical man to be culpably negligent in these cases by not sending his patients to a surgeon. Unfortunately many of them will not go. The diagnosis is not always easy. In the case under Dr. Dock's care, in which there was dilatation of the stomach with severe pain in the epigastrium, an ulcer was suspected. A gall-stone came up in the washings from the stomach though there had never been any pain, or nausea, or tenderness pointing to the existence of gall-stones in the history.

**Nature's Protective Mechanism.**—Dr. Sewall said that bile is a continuous secretion and if the flow of bile were simply stopped by the papilla the stagnant bile would invite the presence of microbes. The function of the gall-bladder seems to be to expel bile every now and then so as to keep the bile sterile. This is one part of the protective mechanism, another is that the natural salts of the bile dissolve cholesterin, and so prevent the formation of gall-stones.

Dr. E. J. Janeway, of New York, said that the doctor must not permit himself to judge too easily of the presence of bile in the stools merely from their color. In one case that he had seen in consultation the stools were said to contain bile because they were green, when as a matter of fact this color was due to spinach which the patient had been eating very freely.

Dr. Moynihan, of Leeds, England, said that he considered that the most informing afternoons of his life had occurred during these last few days while listening to the discussions on pancreatic and biliary diseases. He was not sure which of the occasions he would remember with the greatest pleasure. He said that in England the custom is to make a free incision not only perpendicularly, but also along the costal margin, so that the common duct can be made straight by pulling a portion of the liver out and this duct may also be brought on a level with the skin. In this way operations which used to take an hour may now be done in twenty to thirty minutes.

## AMERICAN GYNECOLOGICAL SOCIETY.

*Twenty-eighth Annual Meeting, held in Washington, D. C., May 12 to 14, 1903.*

FIRST DAY—MAY 12TH.

President Joseph E. Janvrin, M.D., of New York City, in the Chair.

**Address of Welcome.**—An address of welcome was delivered by Dr. I. S. Stone, of Washington, D. C., which was responded to by the President.

**What Shall Be the Treatment in Cases of Pregnancy Complicated by Fibroid Tumor?**—There was a symposium on this subject, in which the first paper was read by Dr. Henry C. Coe, of New York City. He stated that fibroid tumors complicated pregnancy because they interfered with the normal development of the pregnant uterus. They caused distressing symptoms, and jeopardized the life of the fetus or of the mother. Each case must be studied separately, and the decision as to the treatment would vary with the patient, the tumor, the experience, and bias of the surgeon. He spoke of the influence of the tumor on pregnancy, and of pregnancy on the tumor—increased growth, degenerative changes, environment, etc. He mentioned three "periods" of pregnancy: (1) Up to the fourth month. In this stage he advised to empty the uterus in the case of large interstitial or broad ligament tumors, or where they are situated in the lower uterine segment. Small tumors might be enucleated per vaginam; or enucleation should be done by the abdominal route. Subperitoneal pedunculated growths should be removed, and impacted growths should be liberated under anesthesia, when no adhesions are present, and should be kept out of the pelvic cavity until they are kept out of the way by the growing uterus. The wishes of the patient should be followed so far as this can be done with safety. (2) Fourth to seventh month. Pain and pressure symptoms furnished indications for treatment. In the case of large interstitial growths the uterus might be emptied, although the danger of hemorrhage from such a course was greater. He advised enucleation by the abdominal route, but the patient should be kept under observation. Impacted tumors, pressing on the bladder, bowel, ureter, twisted pedicle, degeneration of the tumor, disease of the adnexa, peritonitis, etc., might require interference without reference to pregnancy. (3) After sixth month.—Viability of the fetus should be obtained, if the life of the mother was not actually jeopardized. Can the woman be delivered at term? Yes, with subperitoneal growths, if they were not too large and favorably situated, or with small interstitial fibroids, if they were not in the lower uterine segment. After the eighth month the Porro-Cesarean operation, suprapubic amputation, or hysterectomy, should be performed.

**Myomectomy or Hysterectomy.**—Dr. Joseph Taber Johnson, of Washington, D. C., said the treatment depended upon the size, variety and location of the tumor, and the size of the pregnancy. Myomectomy in favorable cases should be the operation of election. However, cases would occasionally present themselves with such urgent symptoms as to require supravaginal hysterectomy as a life-saving operation. He described briefly successful operations of both varieties.

**Pregnancy and Labor Complicated by Myomata.**—Dr. Geo. Tucker Harrison, of New York City, stated that no general rules can be laid down with reference to the treatment, as each case must be carefully studied in all its circumstances before recourse was had to operative intervention. The dangers of this complication of pregnancy as a cause of dystocia were formerly overestimated. The plan of treatment, during pregnancy, as a rule, was an expectant one.

Dr. Edward Reynolds, of Boston, spoke of the treatment of large incarcerated fibroids, at or near term, in advance of the fetal head. He had seen ten such cases. No one of these tumors was smaller than the seventh month fetal head. In each instance the woman was delivered either normally or by forceps.

Dr. J. Duncan Emmet, of New York City, said there was no question but that certain myomata must be removed either by myomectomy or by the radical removal of the uterus; while there were other cases in which the tumors did not interfere with the course of pregnancy. He was glad one of the essayists had emphasized a preference for myomectomy rather than the removal of the uterus, as the latter was such a serious procedure in its after effects.

Dr. William R. Pryor, of New York City, expressed himself in favor of conservatism in the treatment of fibroids associated with or complicating pregnancy.

Dr. Henry D. Fry, of Washington, in referring to Dr. Coe's paper, spoke of emptying the uterus, saying he thought the cases were rare where this procedure was called for. The treatment was either expectant or radical. Those tumors which indicated emptying the uterus were necessarily located in the lower uterine segment, and yet some of these occasionally rose in the pelvis and gave very little or no trouble.

Dr. Walter P. Manton, of Detroit, Mich., looked upon cases of fibroid tumors complicating pregnancy as very rare. Personally he had seen but six out of five or six thousand cases of labor in private and hospital practice.

Dr. Reuben Peterson, of Ann Arbor, Mich., spoke of a case on which he had operated, the fibroid tumor being located in the lower uterine segment, and was of the interstitial variety. He did a myomectomy, enucleated the tumor, the woman went on to full term, and was delivered of a child.

Dr. Geo. J. Engelmann, of Boston, had twice seen the disappearance of a fibroid following confinement.

**Combined Bisection of Tumors and Uterus with Enucleation of the Former in Abdominal Hysterectomy for Large Fibroid Tumors.**—Dr. Geo. H. Noble, of Atlanta, Ga., said in case of large fibroid tumors in the body of the uterus, the author recommended bisecting the tumor and the uterus, and then enucleating the tumor. In intraligamentous tumors the uterus should be bisected, the capsule of the tumor penetrated from the cavity of the uterus, and the tumor enucleated from its capsule. The advantages of this method were: saving of time; prevention of hemorrhage; increased working space; easy manipulation; accessibility to the blood supply in the deep pelvis, and freedom from liability of injury to the ureters and uterine arteries.

**Relation of Gynecological and Nervous Affections.**—Dr. Chauncey D. Palmer, of Cincinnati, in a paper on this subject discussed this relationship from two standpoints: (1) What influence do female pelvic diseases have in the induction of nervous disorders? (2) What affections of the female pelvic organs arise from nervous derangements? At the start, he ruled out any thought of the occurrence of any organic, so-called structural, lesions of the nervous system, as resulting, unless indirectly and quite remotely, from pelvic diseases. The morbid changes then to which reference was made were hysteria, neurasthenia, neuralgia, chorea, epilepsy, hystero-epilepsy, certain paralyses, migraine, convulsions of certain kind, including tetanus; also mental aberrations, and vasomotor changes. While many hysterical women had no anomaly of the sexual organs, it must be said that a certain proportion of them did have some imperfection in the development of their sexual apparatus, especially the uterus. Hence the justifiability of an oophorectomy in some such cases. Should the sexual organs be diseased in hysterical women, one could not say that the hysteria was secondary. Even then psychical causes were at work, more potent than the local disease. Cases of insanity having been promptly relieved by gynecological operations; likewise it had immediately followed them. Such sequelæ, then noticed, were probably more common than after other operations. In the treatment of women for the special diseases of their sex, there was too much of a tendency to place undue stress on real or supposed lesions of her reproductive organs. This was particularly true in reference to some so-called ovarian affections. Gynecology of to-day would not amount to much without an appropriate surgery, but indiscreet surgery, like overmedication, is abused.

(To be Continued.)

## BOOK REVIEWS.

THE INTERNATIONAL MEDICAL ANNUAL, a year book of Treatment and Practitioner's Index. 1903. Twenty-first Year. E. B. Treat & Co., New York and Chicago.

THE International Medical Annual is the most condensed review of the medicine and surgery of the year that appears. Notwithstanding the condensation, however, the citations of articles are excellently done and there is always sufficient material provided to enable the reader to form a good idea of progress in special branches. The selections are excellently made and the Year Book is without doubt one of the most valuable of the year books. Some things are missed necessarily, but the practitioner with limited time on his hands who wants practical material will find it here in short space.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION. Vol. 18, 1902.

SPECIALISTS in pulmonary diseases know that the yearly volume of the Climatological Association Transactions always contains some interesting, practical material. The present volume is no exception to the rule. Dr. E. H. de Schweinitz's article on Some Comparative Studies of the Tubercle Bacillus and Their Importance in Relation to Tuberculosis in Man deserves careful reading by all those who are especially interested in the course of tuberculosis. Dr. J. O. Cobb's discussion of the reasons for the localizations of tuberculosis in the apices of the lungs while without exception all other infectious processes begin in the dependent portions is a suggestive résumé of an old but ever new subject. The various climates of California, of Colorado, of Arizona and of different parts of Canada are discussed in such a way as to give helpful information to those who may wish to give specific directions to tuberculous patients seeking a favorable climate. These are but a few of the excellent articles.

THE PRACTICE OF SURGERY. A Treatise on Surgery for the Use of Practitioners and Students. By HENRY R. WHARTON, M.D., Clinical Professor of Surgery, Women's Medical College of Pennsylvania; Surgeon to the Presbyterian and the Children's Hospitals, etc., and B. FARQUHAR CURTIS, M.D., Professor of Clinical Surgery and adjunct Professor of the Principles of Surgery in the University and Bellevue Medical College of New York; Surgeon to St. Luke's Hospital, Bellevue Hospital and the Memorial Hospital, etc. Profusely illustrated. Third Edition. J. B. Lippincott Company. Philadelphia and London.

IN its present edition this popular handbook has again been brought completely into accord with the ever shifting tenets of the surgery of to-day. To one who surveys the unceasing stream of Grub Street literature which is constantly pouring from the presses and binderies of our medical publishers it is a great pleasure to meet again such a volume as the present, which, well rounded and complete, concise yet adequate, authoritative without bumptiousness, fulfils its mission with a simple straightforwardness and singleness of purpose that disarms all criticism. Just what the aim of the authors has been may best be gathered from a passage of the preface which states that the essential information necessary for a general practitioner or student to carry on or begin the practice of surgery comprises (1) a description of the various injuries and surgical diseases sufficiently full to enable the practitioner to recognize them when met with in practical work; (2) full directions for the treatment of such injuries and diseases as would usually be attended by the general practitioner; (3) a sketch of the treatment of the more difficult conditions, such as would allow the practitioner to advise patients intelligently in obtaining special skilled surgical attention; (4) an outline of the accepted facts and theories of the etiology and pathology of the various surgical affections sufficient to form a foundation for the clinical picture and give directions for the treatment. This citation is made merely that it may be followed by the statement that in every particular these selfmade requirements have been most rigidly fulfilled and the authors deserve most unqualified admiration for the judgment they have used in the apportionment of space and the method of handling the various topics. It was Talleyrand who apologized for sending a voluminous letter on the ground that he had no time to compose a short one and it no doubt took infinitely more labor to compress so much information into the compass of a single volume than would have been the case had it been allowed to overflow into a second one.

It appears invidious to make selections for especial mention where everything is so excellent, but the chapters on fractures, the surgery of the abdomen and the surgery of the urinary organs are more than worthy of the importance of the subjects they discuss. The treatment of fractures, something so important to the general practitioner, is described with the greatest elaboration and attention to detail and many ingenious modifications of the accepted forms of dressing suggested. The chapter on abdominal surgery is truly a masterly essay on the subject and is pregnant with the results of much personal experience. The description of the operation for carcinoma of the breast is an unusually complete one and the various steps of the dissection are very clearly pointed out. The important subject of hernia also is treated in a manner to deserve especial mention, the author preferring for routine a combination of Macewen's and Bassini's operations. The illustrations throughout are of a high order of merit, notably the drawings of microscopical sections by Dr. F. C. Wood and in this edition many original wash drawings have been added.

Taken all in all, the keynote of the work is practicability and the authors' efforts to produce a work available in every respect for constant every-day use have resulted in producing what is undoubtedly the most useful book of the kind in existence.

THE MYCOLOGY OF THE MOUTH. A Text-book of Oral Bacteria. By KENNETH WELDON GOADBY, Bacteriologist and Lecturer on Bacteriology, National Dental Hospital, London, etc. Longmans, Green & Co., New York and Bombay.

OF late years the flora of the mouth has become much more important, not only for dentists but also for medical men. Some years ago it was pointed out that certain cases of anemia, and possibly even pernicious anemia, were due to the growth of various bacteria in the mouth and their being poured into the stomach in such numbers as to prevent ordinary digestive processes and cause toxemia by growing in large numbers in the intestinal tract. The present volume gives an excellent idea of the various forms of micro-organism that occur in the mouth, especially those which are known to have any pathogenic action. Those that cause such dental affections as caries of the teeth and pyorrhea alveolaris, receiving special attention. Now that the practice of staining the sputum for tubercle bacilli is so common, a little volume that readily furnishes the data by which other forms of micro-organisms may be recognized makes a handy manual of bacteriology, of service to the pulmonary specialist and also to the general practitioner.

THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. 82. NEW YORK, SATURDAY, MAY 30, 1903. No. 22.

## ORIGINAL ARTICLES.

### PROFESSIONAL DISCRETION. THE MEDICAL SECRET.*

BY PRINCE A. MORROW, M.D.,

OF NEW YORK.

IT is hardly necessary to impress upon the physician the obligation of secrecy in relation to any information of a patient's condition confided to him in the exercise of his profession. This obligation, which was formulated in the precepts of the Hippocratic oath, has been accepted as the truest and finest expression of the physician's duty to his patients and has been approved by the wisest and best of medical men in all ages. The observance of this code of duty is the primal professional virtue; and is universally recognized as the basis of all relations between the physician and patient.

No matter what theories or dogmas have divided medical men in opinion or created separate sects or systems of practice, the medical profession, with a remarkable unanimity, has remained faithful to this code of duty. Even the least scrupulous of medical men who fail wofully in their ethical duty to their confrères recognize the binding character of this obligation to their patients. Physicians may violate every principle of right and decency toward a fellow practitioner—may disparge and belittle his reputation and injure his practice—all this may be excused or condoned on the ground of professional rivalry, but the medical secret is regarded as sacred and inviolable.

In relation to venereal diseases, from their essentially private nature and, especially, their "shameful character" in popular estimation, the obligation of secrecy takes on a more vigorous and peremptory application. They are the disseases of all others which the patient would not wish revealed, and it is evident that a knowledge of their existence would not be confided to the discretion of the physician if there was any risk of it being divulged. It is only by virtue of this tacit, though well understood contract that the confidential relations between physician and patient are established and maintained.

To the force of traditional custom the law has also added its weight of authority by making the violation of the professional secret a penal offense. But the law evidently considers the common interests of the social order superior to the interests of the individual, since it has made it obligatory upon physicians to report all cases of contagious diseases which are regarded as dangerous to the public health. This compulsory notification is justified since it is the basis of all prophylactic measures for the protection of the public against these diseases. Doubtless the intent of the notification laws is to include within their scope all diseases which are recognized as contagious and dangerous to the public health. Venereal diseases fulfil both of these conditions, but they are exempted from declaration chiefly because of their difficult and baffling character as a sanitary problem. The French law even compels the violation of the medical secret in decreeing that "the physician who knowingly leaves a nurse in ignorance of the dangers to which she exposes herself in nursing an infant suffering from congenital syphilis may be declared responsible for the prejudice caused by his reticence." It is obvious, however, that the physician cannot disclose the nature of the disease with which the child is affected without revealing the secret that one or both parents are syphilitic.

In Norway and Denmark the declaration of venereal diseases is made obligatory by the law, and while the information is kept secret by the sanitary authorities, it has proven to be one of the best measures for the prophylaxis of venereal diseases, as it has enabled the authorities to locate dangerous sources of contagion and subject them to surveillance and treatment. Doubtless it is only a question of time when the registration of venereal diseases by our Sanitary Bureaus will be generally adopted.

In the ordinary treatment of venereal diseases the physician finds it easy enough to adjust his line of conduct in strict accordance with his code of professional duty, as in such cases the individual interests of the patient alone are involved, but when a venereal patient consults a physician in regard to his marriage, the situation is changed, the interests of others may be jeopardized. His protective duty extends to the wife and future children, and through them to society at large.

It often happens that the special obligation imposed upon the physician to protect the interests of his patient is opposed to and irreconcilable with this larger social duty to preserve others from infection. There thus arise many situations in which the question of professional discretion obtrudes itself and therein the physician perceives a divided duty.

In many cases when the patient applies to the physician for advice in regard to the propriety or safety of his marriage, he does so with the honest intention of accepting and abiding by the physician's decision. The chief rôle of the physician is to explain the significance of the disease, the dangers it might entail in married life, the necessity of treatment and the period necessary to wait before his marriage could be sanctioned as safe. However onerous these conditions may be and however prolonged the prematrimonial probation, the patient yields a more or less ready assent.

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* Read before the American Dermatological Association, Congress of American Physicians and Surgeons, Washington, D. C., May 13, 1903.

There is another class of cases, unfortunately not rare, in which the man fully instructed as to the dangers he would carry with him into married life, will not forego a contemplated marriage despite all representations the physician may make as to the danger of infecting his wife. He will plead an engagement from which he cannot honorably retreat, arrangements completed for the marriage, pecuniary or other selfish interests that would have to be sacrificed—pretexts as numerous and varied as are the motives that influence men to matrimony. He resolutely refuses to forego the marriage. To the physician's advice to wait until he is cured when he can enter the marriage safely and honorably, he will perhaps urge that delay would mean the defeat of his matrimonial projects. The physician's appeal to his honor, the denunciation of his action as base and criminal, do not shake his determination. It is precisely in situations such as these, in dealing with this type of conscienceless criminal—for it is a moral if not a legal crime for a man to risk giving syphilis to a woman who accepts him as her husband—that the professional secret introduces a complicating element which renders the physician's line of conduct extremely difficult in view of the opposing interests involved.

On the one hand there is the duty to protect the confidence of the patient who has consulted him relying upon the traditional assurance that this confidence is sacred and inviolable; on the other an innocent woman, it may be the cherished idol of her parents, who is to be the victim of a most odious injury, the supreme insult that a virtuous woman can receive, to say nothing of the injury to her health and the destruction of her offspring.

The Hippocratic oath enjoins, "My tongue shall be silent as to the secrets which are confided to me and I will not use my profession to corrupt manners or *aid crime.*"

Here is a crime contemplated but not yet consummated, without malice, it is true, but none the less wilful, and from the basest and most sordid motives. The prospective victim is most often a pure young woman, confiding in the love and honor of the man who is about to do her this unspeakable wrong.

By the accident of his professional relation to this man the physician happens to be the only person who can prevent the consummation of this crime, as he is the only confidant. Does not his silence and inaction make of him an accomplice, a *particeps criminis?* The remorseful self-accusation of Paul was that "I was also standing by and consenting unto his death and held the raiment of them that slew him." Is not this paralleled by the attitude of the physician who stands by and guards the dissolute secret of the assassin? A single word to the family physician or natural protector of this woman would save her from this terrible fate, yet the physician is fettered hand and foot by his cast-iron code, his tongue is silenced, he cannot lift a finger or utter a word to prevent this catastrophe. His code shields the criminal more effectively than the most solemn personal pledge. The very name and nature of the disease gives an added significance to the physician's obligation not to reveal it.

If it were a taint of insanity, of cancer, of leprosy even, it might be hinted at or indirectly revealed, but syphilis never.

Another aspect of the situation may be considered which has been literally duplicated in practice: The intended victim is also a patient of the physician. He has brought her into the world, her family have been lifelong friends and patients—but this does not alter the situation. The professional code marks out and strictly limits his line of conduct. Ethically he has no more right to intervene than if she were a complete stranger. He cannot apply the knowledge of a person he has gained in his capacity as a physician to protect one who may be as dear to him as a member of his own family.

There are no circumstances in the entire range of a professional man's experience so painful as to recognize himself powerless to prevent the morally culpable union of a syphilitic man and an innocent woman. There is no situation in which the arbitrary restrictions of a code of conduct based upon professional secrecy seem so opposed to the voice of conscience and the dictates of humanity as the one under consideration. To protect the man, he feels to be odious, immoral and culpable, to protect the woman would be manly, humane and just. The inspiration of his conscience cries out against the former duty, every noble instinct of his nature would be enlisted in the latter duty.

What has been termed the "eternal problem" of the professional secret has long engaged the thoughtful attention of medical men. Like all problems connected with the prophylaxis of venereal diseases it is exceedingly complex and baffling. It may be said that no solution of these problems has ever been proposed, no plan of action for the regulation or control of these diseases has ever been formulated which does not come in conflict with individual liberty, legal rights or moral principles. There is always an irreconcilable conflict between the sanitary and other interests involved.

Now it will be admitted that it is distinctly a sanitary duty to guard against the introduction of venereal diseases in marriage, because they compromise the health of the wife, the existence of the children she might bring into the world, and through them the interests of society. But it would appear that the higher duty of the sanitarian to preserve others from infection falls below his duty as physician to protect a wretch in infecting them. Not only the interests of the many are sacrificed to the interests of the individual, but the innocent are made to suffer in order to advantage the guilty. The law which backs up and supports the sanitarian in his efforts to control and limit the spread of contagious diseases in general here intervenes in favor of the spreader of disease. It sets its seal of silence upon the secret of the individual which cannot be broken—under penalty of the law.

It would simplify the situation if the physician could accept and act upon Dogberry's charge to the Watch in "comprehending vagrom men:"

"You are to bid the man stand in the Prince's name."

"But if he will not stand?"

"Then let him go his way and thank God that you are rid of a knave."

But does not the advice of a distinguished authority have the same exquisite Dogberrian flavor? "Tell him plainly the truth, show him that he will commit a crime in marrying, and if it is seen that he will not be convinced, dismiss him brusquely, as you would dismiss an assassin."

Practically, however, it is to this inane rôle that the physician is reduced through the alienation of his liberty of action by his professional code.

In this connection it will be interesting to compare the views of different writers upon this aspect of medical deontology.

Langlebert gives the following case: "The father of a young woman asks information relative to the health of a young man (your patient) who is engaged to his daughter. 'I wish to ask under the seal of secrecy certain details as to his malady. I beg you to say whether I can or cannot accept him as a son-in-law. I hope that you will take into consideration the embarrassment of a father placed between the desire to give his daughter the husband of her choice and the fear of the results the marriage may have if the hints that have been given me are unfortunately true.'"

"In the case given above," says Langlebert, "should the physician, entrenching himself behind the Hippocratic oath and the proscriptions of the law, guard an absolute silence, or only interrogating his conscience, should he make it the judge of the secret confided to him, to divulge it, or be silent, according to circumstances?"

Commenting upon this case, Dr. Gaide says, "If a client affected with constitutional syphilis, which resists all treatment, does not fear to solicit the hand of a pure young woman, who is the joy of her family—if the father of this young woman comes to demand of me in confidence, if he can in all security give her to this man who would soil her by his first contact and leave her as her only consolation children affected by this malady, shall we respond with a silence which may be misunderstood and thus render ourselves accomplices of a marriage the fruits of which will be so deplorable? Never would I have the courage to obey the law under such circumstances. My conscience would speak higher than it, and without hesitation I should say, 'No, do not give your daughter to this man,' and I would not add another word."

Langlebert indicates the physician's rôle as follows: "I regret that I cannot give the information you ask. The best you can do, if you intend to carry out this project of marriage, is to inform the young man of the warnings you have received or have him come with you or send me a writing by which he authorizes me without restriction to say whether he can or cannot espouse your daughter.

"The physician ought to interdict all kinds of information as to the health of a patient on the occasion of marriage, as a professional principle, an invariable rule of conduct, he should take refuge behind the proscriptions of the law.

"The alternative is cruel, it requires a certain courage in such cases for the physician to remain master of himself and faithful to his duty.

"If it be a misfortune to society it would be a much greater damage to permit the enfeeblement of the tutelary principle of the medical secret which is one of the necessities even of the social order."

Juhel Renoy maintained that it was not only lawful but even compulsory for any doctor who was a man of honor and courage to oppose and even denounce any criminal projects his patients might entertain in regard to marriage. He cites two instances in which he had undertaken the cause of young girls who were about to fall into a trap of this kind and as his patients were without conscience, and had refused to listen to the moral reason he adduced, he had declared that he did not feel bound to secrecy toward them any longer and that he would either go or send to the parents of the young women and warn them. Under this threat one of these marriages was broken off, but a more direct interference was required in the other case. He sent for the girl's father by one of his confrères and replied without hesitation to the question put to him, "No, sir; do not marry your daughter to Mr. X," with so much emphasis that the marriage was broken off.

Jullien, commenting upon his confrère's action, says: "If the result was fortunate the method employed was detestable." "It was treason, perpetrated with the 'best intentions,' but still a treason, for it is all very well to say the patients were warned but it was not until they were no longer masters of their secret, which no doubt would not have been revealed if they had known what use was going to be made of it; strict duty would have required that before receiving this confidence our confrère should have warned the parties interested that he would publish the information if he saw fit."

Jullien reports with evident approval how an old practitioner, Dr. Piogey, solved this troublesome problem.

"A young girl, whom the doctor had brought into the world, of whose family he was a personal friend, and who was beautiful and charming, was about to be married. The Doctor knew the intended bridegroom. He had attended him and attends him still for a terrible, incurable, contagious hereditary disease. To a man so afflicted to marry was not only a bad action but a crime—a really moral and physical murder. The Doctor went to the young man. He showed him the infamy of his conduct. But he had to do with a "struggler for life," who replied coolly that he cared little or nothing for the girl, but she was rich and would save him from ruin, and all that he could promise was to content himself with her money only. What was to be done? The rule of the profession is strict. Even in such a case the Doctor could not break it. The scoundrel knew that and told the Doctor so. "Very good," replied the Doctor, "but since you are unwilling to leave your prey I will snatch it from you. If you do not break off this marriage to-moirow, I will strike you in the face at the Opera." The courage of an honest man overcame the coward and the marriage was broken off. While this action on the part of the Doctor was unquestionably chivalric, it is too Gallic and melodramatic to be imitated in our Western hemisphere.

Thibierge, who proves himself in his recent work (Syphilis and Medical Deontology) a stanch upholder of the absolutism of *le secret médical,* admits "that this obligation weighs heavily upon the physician who in submitting to it is placed in the impossibility of preventing syphilitic contaminations, often multiple, in not being able to prevent the syphilitic from marrying. The medical man feels the obligation to guard the secret troubling his conscience and he regards himself almost as an accomplice in an action which he justly esteems criminal, since the syphilitic will not fail to contaminate his wife; in such circumstances the law appears to him odious, and seems to have been made mainly for the purpose of protecting particular interests, and among them the least respectable of all—the general interest seems to be sacrificed. The physician, in his revolt against the law, may be tempted to yield his obligations to the cry of conscience, forgetting that in the language of a distinguished magistrate, "no one is sufficiently sure of his conscience to put it above the law." Nevertheless Thibierge contends that while the more obvious intent of the law may seem to be for the protection of the individual, yet in reality its ultimate result is in the interest of society, since the enforcement of the obligation of the medical secret constitutes the indispensable condition as well as the most efficacious means for the public prophylaxis of syphilis. He reasons as follows:

"If the medical secret ceased to be imposed and the syphilitic could not count upon the silence of the physician, he would take care not to address himself to the conscientious physician but betake himself to the charlatan, whose silence he could purchase, or, for greater security, he would treat himself or not be treated at all.

"Others, honest but timorous, having the impression that a syphilitic man can never marry—might mistake a simple venereal accident, easily cured, for syphilis, and consequently remain celibates.

"Others, again, suffering from a benign syphilis, held back by the fear of confiding their secret to a physician, would not be treated at the beginning of their disease and seeing all manifestations disappear completely, would imagine themselves cured and marry and infect their wives. Finally, old syphilitics who had had the disease many years previously, not knowing that it was safe for them to marry, would remain single.

"The disadvantages resulting from this relaxation of the medical secret would be, both for individuals and society, much more numerous and frequent and altogether quite as grave as those which it is designed to prevent."

It will be admitted that there is much truth in this line of argument. The venereal patient, and especially the syphilitic, is a timorous creature. He is keenly alert to any circumstance that might suggest a suspicion of his disease. He scents danger of exposure where none exists. He often neglects to give his name or address to the specialist he consults. He looks askance at any prescription, fearing that it may give a clue to the nature of his disease, and he will go to an out of the way pharmacy to have it filled. The slightest intimation that his secret would not be held sacred by the physician under any and all circumstances would drive him away.

Under such conditions the valuable protective service which physicians are now able to render society by enlightening venereal patients as to the dangers of their disease by persuading them from their projected marriage until time and treatment render such a step safe, would be sacrificed.

When we come down to the question of practical results, even assuming that the obligation of the medical secret were entirely abrogated, and that the sanitary duty of the physician in excluding venereal diseases from the marriage relation was as plain as that of the Health Board in excluding trachoma and other contagious diseases from the public schools, what could be accomplished?

In the first place in the larger proportion of cases venereal diseases are introduced into marriage from extraconjugal infections, contracted *post nuptias.* Here it is evident that the preventive duty of the physician could not be exercised.

In the next place in many cases the specialist consulted often knows nothing of the parties interested, neither the name or address of the intended victim, or of her natural protector or the family physician—all may live in a distant city. He could not utter a word of warning, even if such interference were justifiable.

Finally, few patients when enlightened as to the serious and dangerous consequences of a premature marriage, brazenly avow to the physician their intention of carrying out their criminal intent, despite his warnings. One "will see about putting it off," another "will consider the matter," another will remain silent, and while the physician may be morally sure that the man is secretly but none the less resolutely determined to carry out his purpose, he cannot take any step to guard against an act on the part of the patient the intention of which may be distinctly disavowed.

After weighing all the arguments pro and con, after studying dispassionately the practical results which would follow an innovation upon the established principles which guide professional conduct in relation to the patient's confidence, we are forced to the conclusion that the solution of this problem must be found in some other way, *in any other way* than in removing the old landmarks. We may justify ourselves in ignoring particular cases in which both conscience and humanity cry out against our silence and inaction by the consideration that in taking a broader and more general view, the larger interests of society, the greatest good of the greatest number, will be best promoted by remaining faithful to the traditions of the new code. But the physician will fail in his duty if, in his endeavor to prevent the premature marriage of a venereal patient, he does not use every argument, appeal to every motive, play upon every chord of sensibility, and, if necessary, denounce the cowardice and criminality of an action which exposes the innocent to infection with all its train of physical woes.

While the obligation of the medical secret is in the general interest of the social order and should be maintained as a fixed principle of professional conduct, it may be admitted that a situation of a peculiarly aggravating character may present itself when the patient shows himself an exceptional sort of brute by the obstinacy with which he adheres to his criminal purposes after he is assured that he will almost certainly infect his wife—in such a case the physician, knowing all the circumstances and fully appreciating the tragic significance of such a step, must be guided by his own lights and conscience. If he should consider the criminal intent of this monster as entirely without the pale of professional protection and refuse to stifle his own feelings as a man of heart and conscience, who shall condemn him? Such a man is far more likely to prove loyal to the highest ideals of ethical duty in his relations with his patients in general, than the man who views these social catastrophes with a cold-blooded indifference, disclaiming all personal responsibility and considers that in guarding the dissolute secret of his patient he is doing his whole professional duty.

Various expedients have been suggested which would permit the exercise of the physician's protective duty, while the time-honored principles of professional conduct are still preserved intact.

M. Brouardel, whose work (Le Secret Médical) embodies the most elevated conception of the rôle of the physician in relation to professional confidence, thinks that in cases of this character a subterfuge is legitimate. Thus, "interrogated upon the health of one of his patients whom he knew to be syphilitic, he advised the father of the young woman whom he had asked in marriage to exact that his future son-in-law should take out a policy of insurance upon his life, the syphilis revealing itself by accidents so apparent, that the young man in question would not dare undergo the medical examination preliminary to the granting of the policy."

While the acceptance of a risk by a life insurance company may be regarded in some respects as a certificate of present good health, yet it would prove delusive as a guarantee against syphilis. In cases where the disease is recent or revealed by manifestations actually present at the time of examination, it might be detected, but in an interval between the outbreaks the patient even in the first year of his disease may present no incriminating evidence. In this country at least there is no uniformity in the principle adopted by life insurance companies in taking these risks. Some depend upon the results of the medical examination made at the time of the application, and others upon the truthfulness of the answers made by the applicant. The records of life insurance companies would be very misleading as a basis for estimating the prevalence of venereal disease in any country. As one examiner states, "This company apparently has a very virtuous set of members who have been remarkably free from venereal lesions."

The fathers of young women are censured for being largely responsible for the evils under consideration. It is claimed that it is a father's duty to satisfy himself of the health as well as the social and pecuniary condition of his future son-in-law. He may, indeed, contrary to established usage, interrogate the young man as to his freedom from venereal disease, but the latter would be hardly frank enough to reveal the existence of such a disease if he had it. To meet this difficulty it has been proposed that the candidate for marriage should be provided with a certificate from a physician which should be equivalent to a medical sanction or prohibition of his marriage. Many French authorities speak highly of this solution of the problem.

Jullien is quite enthusiastic over such a procedure, "as the father of a family would find himself relieved from any painful uncertainty if at the beginning of an engagement he received a paper couched in terms like this:

> " 'I declare Mr. X. to be free from all morbid conditions of the genital organs. After a careful local examination I have not discovered any trace of disease or contagious or transmissible malady.
> (Signed) Frascator.' "

"In the event of the patient being ill or still uncured of his disease, the terms might be so expressed as to make it equivalent to a certificate of disease, in which case the interested party would not likely use it."

Without reference to the hostility of public sentiment in this country against the adoption of such a restrictive measure there are certain objections of a practical nature which suggest themselves.

While it may be possible to determine the fitness of a gonorrheic for marriage by a bacteriological examination of the urethral secretions, it is not always possible to come to an equally definite conclusion as to the aptitude of a syphilitic to transmit his malady. In many cases it is not possible to determine whether a man is syphilitic or not in the absence of existing accidents and the history of antecedent symptoms, all information relating to which the patient would doubtless withhold. Among other abuses, offices would be opened for the sale of certificates destined only to dupe those they are ostensibly designed to protect.

Another phase of quarantine protection suggested is the requirement by the State, as a preliminary condition to the issuing of a marriage license, of a certificate from an official board of examiners showing that the contracting parties are free from contagious or transmissible venereal disorder. Some of our western sociologists with a fatalistic belief in the efficacy of legislative enactments to correct social evils have sought to place such laws upon the statute books of Michigan and a number of other States. The remedy would be vain and futile of the anticipated results, its thorough enforcement would be impossible, its obvious effect would be to promote celibacy, as many self-respecting persons would rather forego marriage than be subjected to what they would regard as a humiliating condition, while others would evade the law by simply crossing the borders of another State where such a law was not in force.

(To be Continued.)

## A REPORT UPON THE PHYSICS AND THERAPEUTIC VALUE OF CATHODE AND ULTRA-VIOLET RAYS; WITH REFERENCES TO THE ELECTROMAGNETIC THEORY OF LIGHT. AN ATTEMPT TO MORE CLEARLY DEFINE THE GENERAL CHARACTER OF THESE RECENTLY INTRODUCED AGENTS IN THE TREATMENT OF CANCER.

BY ROSWELL PARK, M.D., LL.D.,
OF BUFFALO;
PROFESSOR OF SURGERY, MEDICAL DEPARTMENT, UNIVERSITY OF BUFFALO.

WITHIN the past eighteen months there has been such general interest aroused in the treatment of certain cancerous and other infectious diseases by cathode and ultra-violet rays, and so many have been induced to experiment therewith, that it has seemed to me wise to study more carefully the nature of these agents in order that we may more fully comprehend their physical characteristics before employing them too indiscriminately.

It is very certain that but a small proportion of the physicians who are purchasing more or less expensive appliances, to whose uncertain effects they are subjecting their patients empirically and often rashly, have an adequate comprehension of what they are doing or how doing it. This report is a brief epitome, then, of recent researches into the physics of certain widespread or universal phenomena, with which, it seems to the writer, all should be acquainted who purpose taking up and practising the so-called X-ray or Finsen light treatment of cancer. It is not intended to present here directions for their use, nor to report cases, though to give it a certain "practical" character a few conclusions are appended. *It is too early yet to report cases.* Considerable time must yet elapse before we can speak with certainty as to the actual value of these new methods. Meantime, while waiting for these results, we can accumulate experience, and we can broaden our acquaintance with the agents to which we are resorting. It is hoped that this report will be of assistance in this direction. The subject is approached, as will be seen, with this effort distinctly in view.

Periodically in the history of events and in the advance which science is constantly making, it has become necessary to not only stop, and as it were, take account of stock, but to entirely revise present notions; sometimes in accord with entirely newly discovered facts, at other times in accord with older, and perhaps abandoned, views. This is true at the present time with regard to the most elementary notions concerning the physical character of light and electricity.

The primary concepts of science have included the existence of matter in an incomprehensibly minute division, each tiny particle being spoken of as an atom. Some such concept was absolutely necessary for purpose of measurement and calculation, and as a basis upon which to build a superstructure. While no one ever has seen, and probably no one ever will see, an atom, nevertheless the existence of atoms has been universally conceded by all scientists as a necessary postulate of thought and computation. Scientists have even gone so far as to calculate the size of the atoms, and Lord Kelvin figures the average atom as one twenty-five millionth of an inch in diameter. This is not merely the scientific use of the imagination, as Tyndall used to say, but is based upon calculations which have very much to support them, and practically nothing to weaken them, save the lack of power of our finite minds to comprehend the infinitely small. But the existence of atoms of this size, as a postulate of physical science, does not supply the demands now made upon it, and of late men have been seeking a demonstration of the existence of particles still smaller, by whose activity and ceaseless energy certain natural phenomena may be explained. Both the size and the activity of these ultimate particles transcends the limit of our imagination, yet they are necessary adjuncts to such conceptions of them as we can form. The ordinary conception of an atom has been that in one c.c. of gas there are twenty million, million, million ($2^{10x10}$) molecules. This was Loschmidt's estimate and it has been confirmed independently in several ways, among others by the electrolytic method and by Lord Rayleigh's calculations concerning the opacity of the air.

The researches of Prof. J. J. Thompson, assisted by those of Sir George Stokes and Prof. Townsend, have now apparently established the existence of particles not larger than one-thousandth of the diameter of the atom whose size has just been stated, each of which is capable of carrying a tiny charge of negative or positive electricity, those carrying negative charges being those which most interest us here. It is a stream of these proceeding from the cathode which causes the Roentgen ray, instead of light rays vibrating in a lateral instead of a longitudinal direction, as was at first held. It will be seen that this is not far from accepting Crookes' fourth or radiant state of matter. The greenish phosphorescence of a Crookes' tube is due to the bombardment of the attenuated gas which it still contains by this stream of particles, which are now usually spoken of as *corpuscles*. Although it was at first held that this stream could not be deflected nor reflected, it is nevertheless true that it may be, at least in part, deflected by an electrostatic or magnetic field, if only the vacuum be high enough.

These corpuscles are also given off by incandescent metal, by cold metal when illuminated by the ultra-violet ray, and by radium. Everywhere when pressure of gas is relatively low, *i.e.*, when there is a vacuum, and when the corpuscles find few atoms to which to adhere and give up their electric charges, it is found that they are the carriers of negative electricity.

Thompson has recently shown (*Popular Science Monthly*, Aug. 19, 1901) that there is a remarkable difference between negative and positive electricity, for the latter instead of being associated with a constant mass (*i.e.*, corpuscles) one-thousandth the size of a hydrogen atom, is connected with a mass of the same order as an ordinary molecule, varying of course with the gas in which electrification takes place. That is, the carriers of negative electricity are infinitesimally minute and invariable, while all the positive masses are larger and quite variable. This naturally suggests a view that these corpuscles themselves, or ions, constitute negative electricity and that positive electricity simply implies their abscence from ordinary atoms. This takes us back to the old Franklinic view, that electricity comprised a fluid, and makes us think that in using the term electric fluid they were wiser than they knew, and that changes in the state of electrification are due to transportation from one place to another. It seems to be established that a body negatively electrified has its volume augmented, while positive electrification involving absence of corpuscles is accompanied by diminution of volume. Thus a charged body, by virtue of its charge, possesses proper mass apart from the ordinary matter composing it. All of which Thompson showed twenty years ago.

These corpuscles are not the atoms of a metal, but infinitely smaller bodies, which are the same for all substances. Their failure to escape from a metal, or from the surrounding air or medium, is due to the fact that negative corpuscles are attracted by positive atoms, even by neutral, hence the fact that metals, especially some of them, are such great conductors. Under the influence of great heat or of the ultra-violet rays, the corpuscles seem to acquire enough energy to escape. Radium constitutes an exception to this statement since emanation or escape from it takes place as rapidly as $2^{10}$ times per second, or two-thirds as rapidly as light moves, while they have a very much more penetrating power. Since gas becomes a conductor when the corpuscles pass through it, but not when its pressure is reduced, we have an explanation of electrical phenomena occurring in our upper atmosphere, especially when its density and movements are controlled by such currents as are known to occur. Variations in the earth's magnetic field, and consequently in the compass, may thus be explained. The conception and acceptance of those views about corpuscles, which I have just summarized, have necessitated a complete revision of previous views. These corpuscles, considered to be not larger than one-thousandth of the size of hydrogen atoms, each bearing its charge of negative electricity, are known to be discharged with tremendous velocity: (1) From the negative electrode in a Crookes' tube: cathode rays; (2) from objects impinged upon by these cathode rays (X-rays); (3) from exceedingly hot bodies, such as incandescent metals; (4) from cold metals under the influence of the ultra-violet rays; (5) from the radio-active substance or element radium.

These corpuscles, or ions, passing through a gas produce other ions by collision with its molecules. These ions also with their peculiar electric properties serve as nuclei for the condensation of ordinary matter. It has been the particular service which the great Swedish physicist Arrhenius has rendered, that he has introduced this conception of the electromagnetic properties of these ions into the theory of light, and has shown that while the ordinary properties of light may be considered as still amenable to the so-called laws under which they have so long been studied and classified, there still needs to be introduced into the subject this entirely new feature by which along with the wave motion to which we have been so long accustomed certain other physical features must be added.

Kepler and Newton, who regarded light as a corpuscular emanation, would perhaps appear to have considered it more wisely than they then realized. The hypothesis which they built up was superseded by the wave theory of Huygen's, upon which until very recently all optical calculations were made. It does not disturb the practical value of these calculations if we assume that there is actual projection of matter in the direction of the light waves; matter, probably of this corpuscular and elementary character, which has the power of permeating space, and all other material out of which the elements are probably built up, and which travels with simply inconceivable rapidity.

Let us now step aside, for a moment, from the consideration of therapeutics to see how well these views of Arrhenius fit the various facts regarding the nature of certain universal phenomena, since if our primary concepts can be shown to be comprehensive and correct, it helps very much in limiting the field of inquiry to so relatively small a proposition as that of the therapeutic value of certain light rays. It is known that the surface of the sun evinces a wonderful repulsive force which, at least until now, could never be satisfactorily accounted for. Aside from its heat-giving power, it is our principal source of emission of light. Until recently it had not been generally suspected that a ray of light could exert the faintest pressure, although Maxwell calculated, in 1873, that sunlight at the earth's surface should exert a pressure of .6x10 to the minus tenth power in grams on every square centimeter (592$^{x10}$) Arrhenius, practically accepting this calculation, has shown that on the sun's surface this pressure amounts to 2.75 mg. for every square centimeter. If now one gram of water (*i.e.*, c.c.), weighing this amount at the earth's surface, could be carried to the sun's surface and weighed there it would be found to weigh 27.5 grams, that is, the attraction of the sun would draw it in with 10,000 times the force with which the sun's light would tend to repulse it. But now, if instead of a cubic centimeter, we consider a much smaller cube, the pressure on its base would diminish as the square of its edge, but its weight would diminish as its cube or volume. Consequently, there must come a point when the pressure of light would balance the weight of an exceedingly small particle and finally exceed it. That is, as Cox has described it, these particles would behave as if gravity had become negative or reversed. This limit in minute size is approximately reached with a cube whose edge is one micron in length, that is, one-thousandth of one millimeter.

Here we face this apparent paradox that, providing particles are small enough, the pressure of light may be a much more active factor in their activities than their weight. This will explain, for instance, the long time required for the settling of very small particles in the air, and thus we may account for the red sunsets which were noted for so many months following the eruption of Krakatoa.

But nothing will so illustrate the terrific pressure and repulsive force to which these particles may be subjected as the motions, and especially the curvatures of comets' tails, where the repellant force equals or far exceeds the gravitational or attractional force of the sun. Arrhenius and Bredichin have gone even so far as to calculate the size of the particles in the tails of certain comets, basing their calculations on the hypothesis that as comets approach the sun its intense heat provokes a violent eruption of hydro-carbon vapors, especially on the exposed side, that as the hydrogen boils off the vapors condense into minute drops or particles, of which the larger may drop back while the smaller are driven off from the sun, forming the comets' tails which have been so often seen pointing away from it. They calculate also that particles thus driven may traverse a space equal to the sun's diameter (850,000 miles) in a few minutes. If this be true the formation of tails 120,000,000 million miles long within two days, as has been actually seen, is shown to be theoretically possible.*

Equally well are the phenomena of the corona and smaller prominences accounted for. The sun must project enormous quantities of vapor into space. If this vapor condenses into particles larger than the critical size above referred to (*i.e.*, so that their weight prevents their projection by light) then they fall back toward the sun, giving rise to the prominences seen during total eclipses; if smaller they are driven into space to enormous distances, and appear as the streamers of the corona. Particles of just the critical size may float in clouds such as are also observed.

The zodiacal light may also be explained by the streams of electrically charged corpuscles which the sun emits, which by the time they reach the higher and rarefied regions of his own atmosphere are practically Roentgen or cathode rays. If very hot metal emits these rays, as we know it does, there is every reason to think that the superheated sun's surface does the same. Those rays which are visible to us lie mostly in the plane of the ecliptic, and give rise to the peculiar evening glow in the West which we speak of as the zodiacal light. This will also explain that similar but very faint appearance sometimes seen before the eastern sunrise, which the Germans have significantly termed the "Gegenschein."

No one can have watched the aurora without being struck by the similarity of its manifestations to those of the cathode rays in a Crookes' tube, especially when these latter are subjected to a magnetic field, when they describe helices about the lines of force. The negative particles coming from the sun are scattered most thickly on the equatorial regions of the earth which are most exposed, but before they reach a level in our atmosphere dense enough to excite luminescence they are caught in the lines of force of the earth's great magnetic field and follow them. As these lines dip outward from the equatorial heights toward the surface at our magnetic poles, they finally reach an elevation where the rarefaction is comparable with the vacuum of a Crookes' tube, and here they begin to give out the shifting, darting lines of enormous cathode rays. When they reach the denser layers of the air their energy is exhausted, hence the dark circles around the magnetic poles from which they seem to dart. The Swedish North Pole expedi-

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*At the recent meeting of the American Physical Society in Washington (Dec., 1902), Nichols and Hull described an experiment by which something greatly resembling a comet's tail was obtained under conditions approximating those of nature. A powder consisting of a mixture of emery and puff-ball spores was placed in a vacuum tube constructed somewhat like an hour-glass. The vacuum was made as perfect as could be obtained, precautions being also used to get rid of mercury vapor. Upon pouring the powder from one part of the tube to the other, and at the same time concentrating upon it the rays from an arc, the lighter portions of the powder were seen to be blown out as though repelled by the light, and presented an appearance quite similar to that of a comet's tail. The effect was of the same order of magnitude as would be expected from the authors' values for light pressure.—*Science*, Jan. 30, 1903, p. 181.

tion by a large number of trigonometrical observations established that the average distance above the ground of the base of the aurora is at Spitzbergen, about 34 miles, at which height the pressure of the atmospheric nitrogen is about one-tenth of one millimeter. It has been also shown that at such pressures the rays of nitrogen and oxygen fade, while those of argon and the other light elements, helium, neon, krypton, and xenon, take their place. Furthermore that electrical discharges traverse six or eight times as much space in helium and neon as in hydrogen or argon. This will also explain why the spectra of argon and neon are seen in the aurora much oftener than those of helium, krypton and xenon.*

Additional plausibility is given to this explanation by the relation now universally accepted between sun spots, auroræ and magnetic storms, which have a common variability.

If cathode rays really occur in this way, and to this magnificent extent, our aurora being occasionally visible evidence thereof, then the negative ions formed by ionization of the air will form centers for condensation, and falling to the earth will charge it negatively, leaving the air at moderate heights charged positively. If this be true then clouds should be more common in years when the aurora is more frequent, which is actually the case, since condensation will depend upon the number of ions available for nuclei. The ordinary phenomena of lightning are then to be interpreted as immense sparks taking place across this spark gap.

This theory is capable of further extension to cover the formation of meteorites and nebulæ. By the aggregation of those particles which miss the earth and the planets larger masses are formed, or by the union, perhaps, of these with similar streams proceeding from other suns. Thus are constructed masses of various sizes which obey gravitational impulses, or the attraction of other masses, and move in space in accordance with these governing impulses. Yet other particles escape the other suns and stars and help to form the gaseous nebulæ, for it is well known that there are certain nebulæ which are not resolved by any telescope and whose constituents are shown by the spectroscope to be gaseous. These exist in interstellar space, at the temperature of absolute zero, at which molecular activity is almost or quite stilled, and are not capable of shining by any property of their own. Only their outer borders shine because of their bombardment by these particles which give up their electric charges, and cause the gases of the nebulæ to shine like those of a vacuum tube.

Such is a very brief résumé of the electromagnetic theory of light as comprised in the fascinating and ingenious speculation of Arrhenius, as popularly set forth by Cox (*Popular Science Monthly*, Jan. 19, 1902, p. 265), and may, perhaps, serve to give a little clearer notion as to the so-called corpuscular nature of both electricity and light.

We are now so accustomed to availing ourselves of that most interesting fact discovered by Roentgen only seven years ago that the cathode rays of a Crookes' tube not only produce fluorescence of certain salts, but permeate many apparently solid objects, while causing others to cast shadows, that we are inclined to forget how recent is this discovery, and how much it has meant to us. We are also likely to forget that Roentgen was but the last one of a group of men who had been studying the phenomena of electrical discharges in vacua. Crookes succeeded in producing higher vacua in sealed tubes than any of his predecessors, and he had reduced the pressure of the residual air in these tubes to about one ten-millionth of an atmosphere. He had shown also that at a certain stage of this exhaustion electric discharges from the cathode became visible, and had assumed that this was a projection of active matter shot off from the negative pole with a velocity which he figured at about 250,000 yards a second. Lenard in 1894 found that these rays traveled better in a vacuum than in air, that they would pass through substances opaque to ordinary light and affect a photographic plate. It was Roentgen's service to show that when the degree of vacuum was increased a variety of rays were given off which were more powerful than the Lenard rays, which seemed to be unaffected by the magnetic field, and particularly that those salts which are now used in the fluoroscope glowed under their influence.

The nature of the cathode rays is not now quite as mysterious as it was when they were first discovered. To more completely understand them we should refer to the ordinary spectrum thrown upon a screen when light passes through a prism. The more we extend our knowledge of this spectrum the better we appreciate that beyond the red end may be felt the heat waves, which are of longer wave length and which do not pass so easily through glass as does red light, thereby affording the reason for the use of a glass fire screen. Beyond these rays are others of still longer wave length which were carefully studied by Hertz, and are often known as the Hertzian rays, which have the peculiar property of converting poor electrical contacts into good ones when they fall upon them. A demonstration of such effect may be made with powdered aluminum, which ordinarily is a poor conductor, but which under the influence of Hertzian rays becomes a good one. These rays are supposed to have wave lengths even several miles in length, and they are the longest in this respect of any that have yet been discovered in the spectrum. Proceeding from this ultra red end toward the other end of the spectrum we find that wave lengths rapidly diminish and when we come to those known as the ultra-violet they are estimated as only one sixty-thousandth of an inch in length. These ultra-violet rays are also ordinarily invisible, but can be demonstrated by their property of producing fluorescence in certain substances, for instance uranium glass, which under their influence shines with a greenish-yellow light. They also affect the silver salts more speedily than do the visible rays of the spectrum.

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*Air contains, by volume, one per cent. argon; one or two parts neon per 100,000; one or two parts helium per 1,000,000; one or two parts krypton per 1,000,000; one or two parts xenon per 20,000,000.

Beyond the region of these actinic rays are others, called after Niewenglowski and Becquerel, who discovered them.

The phenomenon of phosphorescence is as yet one of nature's mysteries. It has long been known that calcium sulphide, which is the basis of luminous paint, shines in the dark, but only after it has been exposed to sunlight; by such exposure it acquires a property which it loses after a time.

Niewenglowski was probably the first to establish the fact that certain luminous rays are emitted from phosphorescent substances which may pass through opaque screens and affect sensitive plates. He proved this with calcium sulphide, which had been thus exposed to sunlight. It emitted rays which passed through an aluminum plate. But Niewenglowski's rays are due to the action of sunlight upon the material which he used, and which later emits them.

Without preceding sunlight there would be no rays of this character. But these rays are refracted by glass like ordinary light rays, this apparently showing that they are not made up of a stream of corpuscles as are the cathode rays. These rays were first studied by Becquerel and may be spoken of as Becquerel's rays, *i.e.*, light rays of ordinary wave motion capable of penetrating certain opaque objects.

Becquerel very early conceived the idea of studying whether the property of emitting powerfully penetrating rays was not intimately bound up with phosphorescence. He proceeded empirically by placing various phosphorescent substances, enveloped in opaque wrappings, upon sensitive plates. In this way he discovered that a mineral containing the metal uranium left its marks upon the plate, and that it was not necessary that this material should be previously exposed to sunlight. By further ingenious experiments it was shown that uranium in metallic form prepared in the electric furnace gave out greater abundance of rays than did any of its compounds, and that this emission of rays was continuous and direct, even, so far as could be seen, never ceasing. The next step was to ascertain whether this property was due to uranium itself or to some other substance contained within it. A further study showed that the metal contained certain impurities, and further still that these impurities were composed of at least three distinct elements: radium, actinium and polonium. Uranium is prepared from pitch-blende. From this mineral Prof. Curie and his wife isolated a very small quantity of radium, which they finally got in the pure form of radium chloride, which has been shown to have a ray emitting power one hundred thousand times greater than uranium. If radium could be secured in pure form it would have a value of nearly $1,000 a grain. To-day in all the world there is only a fraction of a gram of pure radium chloride, and the other elements mentioned are mainly known by their spectra.

Becquerel rays then are those emitted by radium in some of its forms. Radium stands alone, so far as is at present known, in its powers in this direction. If a tube of its chloride be held to the forehead in the dark, with closed eyes, the experimenter will still see light, since the retina itself becomes phosphorescent. It shines quite vividly by its own light. When applied in sealed tubes to the outside of the body it produces intense dermatitis, or even sloughing of the skin. It imparts its radio-activity to any substance placed in its neighborhood. Not only metal objects but the clothing, and even the bodies of exposed experimenters, give out rays capable of affecting photographic plates and discharging electroscopes.

It has been lately proposed to employ radium locally over superficial cancers, and to thus take advantage of its wonderful properties in influencing the disease process. But until it can be procured in some reliable or semi-reliable form this will be impossible. A gram, if it could be procured, would be worth at least $10,000 to-day, and there does not exist, at present, in all the laboratories of the world even one gram of this precious substance.

Becquerel further experimented as to the effect of a magnet upon these rays. He has shown that some of them at least are deviable, while others are not; that is, they really consist of two distinct kinds of radiation, one influenced, the other uninfluenced by the magnet. The former seem to be identical with the cathode rays of a Crookes' tube, while the latter are identical especially with those particularly described by Roentgen.

Perhaps the greatest mystery of all is the source of the ceaseless energy which radium emits. The answer will probably be found in those vibrations of ultimate matter which are transmitted throughout space, which, as Duncan has said, is all "aquiver with the waves of radiant energy" ranging from the infinitely short to the incomprehensibly long; the rays which most interest us being the exceedingly short, while the waves of great length corresponding to the sound waves of the organ diapason are the waves of Hertz and Marconi, equally mysterious, but concerning us less at this time and place.

It is known that certain insects and small animals give off a peculiar radiation which much resembles the Niewenglowski rays, which will pass through aluminum and affect sensitive plates. Finally, still further along in the scale we come to the cathode rays, for which our only source at present seems to be electrical discharges in high vacua. These rays have a wave length and a velocity which can scarcely be measured. I will not attempt here to state the figures. They are doubtless of the same general character as those manifestations seen high in our atmosphere, which occur at any or all times, but which are more visible at night, to which we give the name of the Aurora. There is every reason to think that both are produced alike by a stream of the corpuscles of which I spoke in the early part of this paper, or of that incomprehensibly attenuated matter to which in time past we have vaguely given the name ether, and to which Crookes referred in his description of the fourth or radiant state of matter.

When these discharges occur under our control and production it may be noted that the cathode rays will not only cause fluorescence and affect sensitized plates, but that they also will discharge bodies charged with electricity, their powers in this direction being more conspicuous than those of the ultra-violet rays. The reason for this last fact is that the cathode rays destroy for the moment the insulating properties of the air, and that the electricity consequently leaks away from the charged body. Apparently they do not show this effect through solid insulating material, nor even through the skin.

So-far as the action of the X-rays upon micro-organisms is concerned numerous experimenters have reported various results, some of which are quite contradictory. Experiments have been made in various ways with bouillon and plate cultures manipulated in various ways, and the organisms experimented with have been of all degrees of virulence. Perhaps the most instructive of these were made by Reeder, who exposed culture plates beneath sheets of lead with openings made in them, so arranged that the rays would fall upon distinct portions of the culture; further on even excluding ordinary light by black paper. He found that the various organisms flourished in those parts where they were sheltered from the X-rays by the relatively opaque lead screen, whereas on the exposed areas they were either absent or feebly developed. That the chemical nature of the medium was not altered was shown by the fact that cultures subsequently grew upon these areas. These experiments are certainly suggestive and indicate the probability of inhibition of bacterial growth by X-rays or else by electrical influences in connection with them to which influences would alike be exposed those parts of the body which are subjected to the X-ray treatment of to-day.

The general conclusion which Reeder reached is that bacteria outside of the body in suitable media can be deprived in this way of capacity for further development.

A number of experimenters have carried these investigations further and after inoculating animals with various bacteria have exposed them to the X-rays. These results have been practically negative. Passing now from electricity to light we must study it first by some of its effects.

Our knowledge concerning the action of light upon living organisms, animal or vegetable, is very inexact. It is known that the rays of the darker end of the spectrum, namely, the most refracted, are those possessing the greatest degree of chemical and the least degree of heat activity. The reason for this is absolutely unknown. Studies on the effect of monochromatic light would seem to indicate that upon animal organisms the chemical rays seem to exercise something of a distinct influence. This has not yet been demonstrated for plants.

That plants are very easily influenced by light has been firmly impressed upon my mind ever since I saw the late George Romanes demonstrate before the British Physiological Society, in 1890, experiments which he had made with fresh and tender young mustard plants. He sowed the seed in suitable small receptacles and when it began to sprout placed them in a dark chamber. In this chamber electric sparks were produced by an induction coil at varying rates. Invariably the plants turned their tops in the direction of the sparks, even when these were produced so slowly as once a minute. It was as though every tiny plant were looking toward the source of the light. I have never seen these experiments of Romanes referred to, but it seems to me that they have an importance of their own.

This appears corroborated by this fact: the ultra-violet rays have the property of discharging a negatively electrified body. When such a body is provided with a zinc surface it has been shown that while the rays produced by an arc light required twelve seconds to discharge an electroscope the condenser spark would do the same thing in five seconds. Evidently then condenser sparks are very rich in ultra-violet rays (Turner, *Medical Electricity,* p. 365).

The effect of ordinary light upon bacteria has been studied by many observers, who generally agree upon the conclusion that light is, of itself, the best, cheapest and most generally available of bactericidal agents. Experiments with monochromatic light have shown individual differences and it would appear that the heat rays are much less effective than the chemical rays. Gruber has shown that the violet rays have a much more pronounced effect upon ordinary earthworms than do the red rays, and that this effect is perceptible even upon decapitated worms. Dubois has made similar experiments with proteus, which is the most active in the darkness of the red rays and least so under the influence of the chemical. Fifty yars ago the Vienna physiologist, Brücke, demonstrated the color scale through which the chameleon would pass on changing from darkness to light, which changes are due to the pigment cells in the skin, and which he showed to be thus capable of migrating from the depths to the surface and vice versa. Paul Bert carried the experiment further and exposed one-half of the chameleon's body to red light and the other part to blue; under the former the skin remained light, under the latter it changed to dark. Numerous other experiments made upon animals would indicate the role played by light in their pigmentation.

So far as the human skin is concerned it is of course possible to very seriously affect it by heat rays, but it would appear that under ordinary circumstances it is the ultra-violet or chemical rays which produce both pigmentation and erythema, the latter often extending into a dermatitis.

The same effects are produced by sunlight in the polar region, as in the tropics. It was Charcot who, in 1859, first stated that the chemical and not the heat rays of electric lights produced skin affections identical with those produced by sunlight.

It would appear, furthermore, that the pigment in the skin serves as a protection against the chemical rays, which fact was perhaps first stated by Unna in 1885. In general we know that as we approach the equator we find mankind darker in color and that the most gorgeous plumages are found in tropical regions. Moreover the most exposed parts of the body seem to be thus most protected by pigment. The back is usually darker than the belly, and this is conspicuously so in the case of creeping animals and flat fish. Sunlight seems to have the same effect also upon vegetation, the degree of coloration depending not upon the intensity of the light but upon the number of chemical rays.

The irritative action of the actinic rays upon the skin may produce all sorts of lesions from the mildest hue to a gangrenous destruction, depending not alone on the intensity of the light but the proportion of its chemical rays. These lesions are naturally more pronounced upon persons of light complexion, or blondes, while albinos suffer most. Observers have studied the effect of electric light upon the skin and eyes. Maklakow in order to protect others studied the effect upon himself and suffered severely both in his eyes and upon the skin of the face, the pain and edema of the face and conjunctiva being almost unendurable. Widmark, examining the subject for himself, found that when the ultra-violet rays were excluded the skin was uninjured; when the heat rays were excluded there was no particular effect.

In this connection there enters another factor, apparently unappreciated until Finsen and his pupils took it up. It relates in fact to this, that only such amount of light as is actually absorbed by the tissues is of injury to them. In other words, the actinic effect of light is directly proportionate to the degree of its absorption. When now we test tissues to see which has the greatest capacity of absorption we find that in reality the blood excels in this respect. This is a matter to be again alluded to, but it affords the explanation for the practical demonstration of the fact that the parts to be exposed to the Finsen light are to be made as bloodless as possible. Exposure to light is again the explanation for not a few of the pigmentary and other lesions of the skin such *e.g.*, pellagra and xeroderma pigmentosum or melanosis lenticularis. The first appearances are met with upon those parts most exposed to light.

Again the influence of light upon the course of variola seems to have been recognized for a good many years. It was first mentioned in 1832 by Picton and in 1867 and later by Black, Barlow and Waters. You will readily recall that the deepest and most numerous scars occur upon the face and hands. Finsen and numerous other observers have noticed that by keeping smallpox patients in rooms with red glass windows, similar to the dark rooms of the photographer, *i.e.*, that by thus filtering out the ultra-violet rays, there was very much less tendency to markings on the skin. Finsen also calls attention to the fact that it is possible to more or less protect the skin from the infection of the chemical rays by painting it with tincture of iodine, or with solution of copper sulphate, or with some ointment. The iodine colors the skin yellow, the copper solution absorbs the actinic rays and tends to color the skin black, whereby all rays are kept out.

In this connection it is worth while to remember the fact alluded to by Petersen, that in the middle ages it was customary to treat smallpox with a red colored environment, since red bedding was used, red balls were placed inside the bed, etc. Exactly what the results were we do not know. In Rumania there used to be an ancient custom to cover the face and hands of smallpox patients with red cloth, and a French naval surgeon wrote, some time ago, that he had often seen in Tonkin these patients shut up in alcoves which were completely closed with red hangings.

At all events it would appear that the exclusion of chemical rays should be absolute, that it should be continuous until the vesicles are completely dried up, that even a short exposure to light materially damages the result, that the treatment should be begun very early, that it in nowise interferes with any other treatment, and that by resorting to it suppuration and disfiguration can be remarkably diminished in degree and extent, if not absolutely prevented.

Finsen has also carried out a number of interesting observations upon the irritating properties of chemical rays. For instance, very young salamanders lying at the bottom of a dish of water are not disturbed by red or yellow light, but by blue they were promptly excited to movement; so it was, too, as before remarked, with the ordinary earth worms, which would collect beneath the red and avoid the blue glass. Gruber had also the same results, from which it would appear that various animals can distinguish by their integuments between red and blue; while they seem to enjoy the former, they avoid the latter tint. He found this true to such an extent that he described a specific photodermatic sense. The same thing may be seen even with common house flies. Indeed, the effect may be so pronounced as in certain cases to produce reflex motions in embryos and lively reaction in various smaller animals. It thus would appear that light is awakening in more than one sense.

Nearly all investigators having agreed that light is a powerful bactericidal agent, it is not strange that certain infectious diseases of the surface of the body, when exposed to it, have been found to yield to the treatment. In fact, at present it seems to be a question merely of the depth to which its effects may be made to be felt. There is no better illustration of a lesion of this kind than ordinary lupus. There is no question but what sunlight would be always the most serviceable for this or similar purposes were it always available. When it can be used a very simple chambered plano-convex lens, several inches in diameter, can be used for the purpose. It should be several inches in diameter, with chamber open at the top in order to permit it to be filled with a methyl blue or blue vitriol solution, by which the heat rays are filtered out. This only needs to be mounted as is a compass in order to permit of its use whenever the sun is shining brightly.

I have already remarked upon the light absorbing powers of the blood. A very simple experiment may be tried at any time which will show the necessity for rendering the parts exposed to phototherapy as bloodless as possible. A piece of sensitive albumin film may be placed behind the ear in contact with the cartilage. If now the ear be exposed to ultra-violet rays even for several minutes, without compression, the effect upon the film is relatively small, but if the cartilage and the paper be pressed together between glass plates, so that the blood is expelled from the living tissue, the paper will be promptly blackened in less than 20 seconds exposure. This is an experiment so convincing that it justifies all the efforts made to render parts anemic. Hence the various compressors and pieces of apparatus which are used for this purpose. Only inasmuch as it is known that ordinary glass itself filters out a large proportion of ultra-violet rays it becomes necessary, in order to obtain the best effects, to use compressors made either of ice, rock salt or quartz, since these easily permit the ultra-violet rays to pass through them. The instruments used now should be all provided with quartz plates and adapted to this purpose—hence the expense attached to such apparatus. It is desirable also that the patient be so exposed that the light shall fall perpendicularly upon the affected surface. Working with such rock crystal and with an electric lamp of 80 ampères Finsen claims to have destroyed the micrococcus prodigiosus in one minute, and to have practically disposed of lupus nodules so that they would shrink up and disappear after fifteen minutes' exposure.

This matter of the total exclusion of glass and substitution of quartz or rock salt is more important than has been generally appreciated. The violet rays easily pass through glass but the ultra-violet rays are almost completely excluded by it. Again the difference between the effects produced by the ultra-red and ultra-violet rays should be emphasized. The former, the heat rays produce more or less redness of the skin, which quickly disappears. On the other hand the actinic rays produce scarcely any reddening, while their maximum effect is not attained for from twelve to twenty-four hours.

Practically we have to produce the ultra-violet rays either by using sunlight, which limits the production, or by one of two artificial means: the utilization of the arc light or by electric sparks from a condenser. There will always be a certain disadvantage attaching to sunlight, namely the amount of heat radiation which must always be prevented by some filtering arrangement, and while copper sulphate solution *e.g.*, will answer this purpose it also takes out some of the other rays which one does not want to lose.

If an arc light could be provided with iron electrodes a much larger number of ultra-violet rays would be given off than are produced by carbon, but then the arc light so made would be a source of a large amount of radiant heat. Electric sparks are known to give off light of high actinic value and so-called condenser spark lamps have been devised and are now on the market by which a discharge is made to pass between two electrodes, which preferably are of iron. Such lamps are useless, however, unless they are provided with quartz fronts, or lenses.

The salts which ordinarily fluoresce are not so sensitive to the ultra-violet rays as to the Roentgen rays, and the fluoroscope cannot be used with the Finsen light.

The ultra-violet rays have this most peculiar property, that they can discharge a negatively electrified body, in which respect, of course, they differ from condenser sparks, which will discharge any charged body, from which it is evident that the condenser spark is very much richer in these rays than the arc light. They can also produce nuclei for cloud condensation in moist air and finally, in addition to this, they have a special action on the skin, at least of the higher animals, and on the entire tissues of the lower animals and plants, which has been already noted.

When tested carefully as to its transparency to the ultra-violet rays a sheet of glass one twenty-fifth of an inch thick proves to be as opaque as a piece of hard rubber one-fourth of an inch thick, or as the entire hand. The most transparent material is polished pure rock salt, which must, however, be kept both clean and dry in order that it may preserve its properties.* A condenser spark lamp has also this advantage, that it does not radiate heat and that only a simple cooling arrangement is required, and that while rock salt forms the best compressor a piece of ice may be advantageously used, since the anemia produced by this pressure is increased by its coldness and its opacity to radiant heat.

We thus have two therapeutic agencies affording us methods of treatment which are so new and to such an extent still on trial that we must hesitate lest enthusiasm run away with judgment in discussing their merits and their applicability.

Nevertheless the results of extensive experience

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*At the meeting of the American Physical Society in Dec., 1902, Prof. R. W. Wood described and exhibited a screen which was transparent to ultra-violet light, while being opaque to the rest of the spectrum. Such a screen is very useful in photographing ultra-violet spectra, since it enables the overlapping spectra of other orders to be eliminated. The author showed an interesting lecture experiment in which the rays of the lantern, after passing through such a screen, were concentrated to an invisible focus, where a suitable fluorescent substance was excited. The screen was made by combining a gelatine film containing nitroso-dimethyl-aniline with copper oxide and cobalt glass.—*Science*, Jan. 30, 1903, p. 182.

may at least be formulated in the following safe and warranted conclusions:

1. They afford methods of treatment for extremely new growths of limited area and superficial character, which, while not exactly certain, are extremely promising.
2. They not only cause no pain, but tend to relieve pain, both superficial and deep, in a most pleasing and satisfactory way.
3. They are adapted to cases which can hardly be submitted to any other method of treatment, and they afford more hope in delayed or inoperable cases than does any other method of treatment.
4. It will be found that the odor of putrefaction may often be suppressed by their use and the putrefatic process itself checked.
5. Burns and intense dermatitis, so frequently noted when the treatment first came into vogue, may now be almost certainly avoided.
6. More than this they afford a supplementary method of treatment after operation, by which the benefits of the same may be enhanced and enlarged.
7. It is not necessary to intermit such work as the patient may be engaged in, in order to carry out the X-ray or phototherapeutic method of treatment.

Of course it is not fair to expect too much of such agents, especially of those so new. One of the most comforting aspects of their use is the relief from pain which they afford even when this pain is deep seated and of uncertain origin. Even such use of the X-rays as is called for in an ordinary fluoroscopic examination has been known to relieve pain, although by it nothing else was accomplished.

What it may accomplish in deep cases is as yet pure conjecture. Without entering into detailed reports, I am at least positive of this, that in certain inoperable cases of intraperitoneal cancer and tuberculosis, accompanied by more or less ascites, cathode rays have certainly relieved pain, retarded extension of the disease and apparently been of great benefit, even if such benefit prove but temporary. This of itself is of greatest value, and can be accomplished better in this way, perhaps after an abdominal section, than by any other measure with which I am acquainted.

The X-rays apparently will also relieve itching in certain instances, and may especially be used for removal of hair, for cosmetic reasons or in treatment of sycosis, of favus, of psoriasis, and will be found serviceable in the removal of those birthmarks which are covered with, or surrounded by, considerable growth of hair. So far as phototherapy is concerned it must necessarily find its widest range of application when the disease is limited to a small area and is superficial. Morris and Dore have shown (*British Medical Journal*, Feb. 9, 1901, p. 326) that there are certain skin conditions which are not favorable for phototherapy, especially such scaring as results from previous scraping, pigmentation by which the ultra-violet rays are intercepted, vascularity in those parts where a compressor of some kind cannot be applied, deep lesions, and those of skin or mucous membrane whose location makes it difficult of treatment *e.g.,* about the eye, in the nose, mouth, etc.

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## THE CURE OF ANAL FISSURE WITHOUT OPERATION; REPORT OF EIGHT CASES.

BY S. LEWIS, M.D.,
OF BROOKLYN, N. Y.

It is greatly to be feared that the ready curability of fissure by stretching, etc., under ether has led to indiscriminate use of this method. Such seems markedly the trend of recent literature, viz., to recognize that many more, even the severe, cases are curable by simpler methods than has been supposed. (Boas, Hemmeter, etc.).

My own experience has been that the simple abrasions tend to spontaneous cure, unless local conditions, as hemorrhoids, have lowered resistance, that the fissure itself in many recent simple cases can be cured by any stimulating applications with proper constitutional treatment, while in the severe cases I have, partly by accident, been led to a course of treatment which has given such excellent results as to seem worthy of report.

My first patient came to me three years ago. History was briefly as follows: One year previous she had been in my service as interne at St. John's Hospital, suffering from sloughing perineum following an operation at home. Since leaving hospital she had suffered extreme constipation, movements being blood-streaked and followed by agonizing pain, lasting over two hours. She had been treated by three physicians, each causing her great pain and finally advising operation under ether. One had used a "caustic stick" repeatedly, without benefit.

On examination I found an "irritable ulcer" in the grasp of the sphincter and was struck by the similarity of its appearance to certain cases of indolent leg ulcer, in which, following the suggestion of a writer whose name I have unfortunately forgotten, potassium permanganate had been applied with success. Knowing that the usual methods must have been exhausted I applied this, as will be described, and dismissed her with little encouragement, but advice to submit to operation if she found no relief after two weeks' treatment.

The result astonished me so that I have since seized every opportunity of employing the method and have now, from my own work in private and dispensary practice and the kindness of medical friends, records of eight cases.

All were typical cases, suffering the usual agonizing pain. Four were chronic and had been advised to undergo operation. One had suffered so much as to repeatedly threaten suicide; another, although a most cleanly woman, had "not been able to get up will power enough to change her clothes, for three days."

In its essence the treatment consists in applying to the fissure and surrounding area a saturated solution of potassium permanganate and using a suppository containing sulphichthyolate of bismuth. Technic is of importance and is as follows: Patient in semi-prone position on table, supporting her own right buttock. On separating the folds at the mucocutaneous junction, as a rule, the outer extremity of the fissure or painful ulcer, or at least a red streak indicating its location can be seen. It may be hidden behind a sentinel pile and may be multiple. Cocainization, (6-per-cent. solution applied on cotton pledget for 10 to 15 minutes), is often required before satisfactory examination can be made and may have to be repeated on reaching fissure. If spasm exist I have passed a large flexible bougie and left in situ five minutes. (This is rarely needed.) A thorough digital examination may now be made, if desired. Expose fissure, cleanse gently with warm water and apply permanganate on tiny swab to fissure and whole surrounding area. A smarting occurs lasting two to ten minutes. No patient made more complaint than to say "that smarts a good deal."

*After-treatment.*—In contradiction to one of the leading authorities (Gant, Dis. of Rectum and Anus, p. 124), I am amazed to find the "severe pain and tenesmus" following the use of suppositories absent in my cases. I ascribe this to (1), the special action of the permanganate; (2), the satisfactory shape and consistency of the suppository employed, and care in its use. I have discarded a former favorite (a combination of Peru balsam and iodoform) and employ a suppository sold under the name of anusol. This affords an absolute uniformity of shape and consistency and presents a more astringent and stimulating action on the fissure and on hemorrhoids if present. Best of all, it pulpefies the stool, which is allowed to be *passed daily*, a much simpler method than that of Boas, who stops the movements for a week or more. In my worst cases I have inserted the suppository myself or instructed a competent nurse. It should be employed night and morning warmed till "slippery," then gently pressed against the anal orifice *on side opposite to fissure* until the sphincter relaxes and suppository slips in. In most cases it can be inserted by the patient. I cannot feel that ointments, as recommended by Gant, or powders (Boas), could be relied on to reach the involved area if applied by patient.

One suppository is ordered night and morning, the usual dietetic and medicinal treatment of constipation prescribed and patient told to report in two days. Severe cases are told to rest as much as possible, reclining. The worst are confined to bed.

Now mark the result. In every one of my cases the next stool has been loose, mixed with products of melted suppository and marked by *two or three minutes of smarting* in cases in which for days and weeks, even months, preceding the patients have after every stool rolled in agony lasting sometimes two hours.

Condition at next treatment: spasm and inflammation greatly lessened, ulcer covered by clean granulating area. Treatment as before but cocaine omitted, patient to report in four days or sooner if any pain exist. At third treatment, suppositories may be reduced to one daily, at bedtime.

Three of my cases have relapsed but yielded at once to repetition of treatment. My worst case, a sufferer for 20 years, kindly referred by Dr. Catlin, of this city, tore the mucous membrane almost through by a constipated movement two weeks after apparent cure. Under treatment she was healed within ten days. This patient was a deaf-mute and extremely anemic and debilitated. In view of the tendency to relapse all patients are instructed to avoid constipation, apply cold water daily and use an astringent ointment for months. Also to return at once if the least pain occur.

One word of theory. I believe the immediate relief of pain to be due to destruction of the sensitive exposed nerve-ends by the permanganate and the disinfection and stimulation of the raw surface, forming a protective covering of granulation tissue. To trauma of this tissue may be due the fact that *a second movement in a day is liable to be more painful than the first*, a symptom occurring in most of my cases which I have not seen recorded.

Previous to this treatment I have used the other applications as recommended (nitrate of silver, etc.), with greatly inferior results. The advantages of the suppository in after-treatment are obvious.

One word of caution. If treatment fail to give immediate relief there are probably other fissured areas present. Examine more thoroughly and if none found, cocainize and make the application "blindly." Enough improvement will follow to relax the sphincterial spasm and disclose the fissure.

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## THE THERAPEUTIC USE OF SUPRARENAL GLAND IN CERTAIN DISEASES OF THE SKIN.*

BY MARTIN F. ENGMAN, M.D.,
AND
WM. P. LOTH, M.D.,
OF ST. LOUIS, MO.

Vulpeau and Virchow in 1856 demonstrated that the medulla of the suprarenal glands contained a reducing agent. Ten years later, Brown-Sequard, from his animal experiments, affirmed: (1) That these glands were necessary to life; (2) that they modify or destroy a substance which otherwise becomes a pigment; (3) that when the glands are destroyed or removed this substance collects in the blood; (4) that removal of these glands is fatal to the animal and that injection of the blood from such an animal into a healthy one produces generally fatal results.

Hans Strehl and Otto Weiss, working in the Physiological Institute of the University of Königsberg in 1900, report that the death of animals, in which the adrenals and accessories were removed, was due probably to the loss of nerve power or that the adrenals produce a substance which keeps up blood pressure or which destroys a substance derived from muscles or other tissues that accumulates in the blood and exercises an effect to reduce blood pressure when the glands are removed. The fact that animals die much more quickly after removal of the adrenals when the muscles have been previously tetanized favors the latter assumption.

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* From the Dermatological Clinic of Prof W. A. Hardaway, Polyclinic, Washington University, St. Louis.

Oliver and Schafer, Cleghorn, A. Gottlieb, Lewandowsky, J. N. Langley, and others find experimentally that by the administration of the suprarenal gland the tone of all muscles is increased, that the heart beats are greatly strengthened, that the blood pressure is raised through the action of the gland upon the muscles of the heart and vessel walls. J. N. Langley believes that only those muscles which are governed by the sympathetic nerves are thus stimulated. He therefore agrees with Lewandowsky that pupil dilatation from its use is due to this action upon unstriped muscle fiber. Lewandowsky caused the hair-muscles of a cat to contract and raise the hair by administering large doses of adrenals.

The results from the therapeutic use of the adrenals largely assist in confirming the assertions of the animal experimenters. The favorable influence of the dried extract and its active principle, adrenalin, isolated by Takamine, in ophthalmology and rhinology, especially its hemostatic and constringent effect, is acknowledged. Floersheim, Kenworth, Bates, Harrison, and others have used the dried extract internally with successful results in internal hemorrhages from the lungs, intestines and other viscera. Floersheim and Bates were the first to call attention to its beneficial action in valvular diseases of the heart. E. M. Houghton believes that it acts like digitalis in these cases, though its effect is much more temporary. Bates* refers to four cases of edema of the glottis in which the swelling was controlled by dropping the dried extract of the gland upon the tongue, a method of administering the remedy which is also much favored by Floersheim when a rapid effect is desired.

The published reports of the use of the gland in dermatology are limited to two articles; in 1900 Munro used it in acne rosacea both internally and locally. He obtained decidedly beneficial results by painting the reddened area with a solution of the extract of suprarenal gland, 1 part in 12, together with the administration internally of from three to six five-rain tabloids daily. Merie used strong solutions in pruritus vulvæ with very good results.

On account of its effect upon the muscle coats of the vessels and probably upon the vasomotor centers, we were led to try the gland internally in certain diseases of the skin due to deranged conditions of the vessels (of the vasomotor nerves) with exceedingly good results, which, in some cases, were so marked and rapid, that we feel justified in placing it prominently upon the list of remedies to be tried in these troublesome conditions. The dried extract has been the only preparation used and always in the form of a powder. The tablets have never been employed by us for fear that they would not be so readily assimilated as the finely pulverized and dried extract. The dose has been always gradually increased, as we have seen some rather untoward symptoms produced by too large a dose, such as violent nausea, dizziness, acute tremor. To children under four years of age one-half grain three times daily can be given with safety and gradually increased to two grains. Between the ages of four and twelve years one grain is the initial dose, gradually increased to three grains, three times daily. In older children and in adults two grains, gradually increased to six, may be used. The remedy should never be taken upon an empty stomach, especially not before breakfast, as quite violent purging, griping, nausea and vomiting can be caused, probably by its local effect upon the gastro-intestinal mucous membrane. This unpleasant action we have seen several times and have learned to warn our patients always to take the powder shortly after meals.

Several writers say that the drug is perfectly harmless and that a large dose will not produce any greater effect than a certain smaller quantity; that 60 grains, for example, will not produce any greater effect than five or ten grains, or whatever quantity happens to be the physiological dose for that patient. This has been contrary to our experience, and we do not understand how such a powerful remedy, producing such marked and rapid effects, can be a harmless one as well. We are always careful in its administration, not any more so than with strychnine, for example, and while it is true that we have seen no alarming symptoms resulting from its use, nevertheless we do not advise its indiscriminate administration. There is also a cumulative action upon the nervous system, although its stimulation of the heart muscle and the increase in blood pressure be transient. When long continued in fair doses, for a month possibly, in certain individuals the drug will produce a tremor of the extremities, which is increased by a larger dose. This we have seen in two patients; one of them, upon taking five grain doses three times a day a second time for two weeks presented similar symptoms as during the first course. From our experience with these two cases we are convinced that there is a cumulative effect upon the nervous system, the symptoms of which rapidly disappear when the administration of the drug is stopped, or which can be markedly and, to the patient, alarmingly increased by an additional dose.

The two patients referred to may have been, and no doubt were especially susceptible to this influence. Others under our care have taken the gland in as large doses and for as long a time as the cases in question without any unpleasant symptoms whatsoever.

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*One of these was a case of Becker and another of H. H. Curtis.

The diseases of the skin, in which the gland seems to have any effect, are those produced probably by some toxic disturbance, exhibited by a derangement of the vessels or of the nerves controlling them, and in some instances it acts surprisingly; almost a specific. This favorable action unfortunately cannot be foretold by the nature of the case or its symptoms, but it has occurred sufficiently often in our experience to lead us to employ the remedy among the first prescribed in cases of this character. It is almost needless to add that we have often been disappointed in obtaining no result when one was expected, probably after observing a most happy effect in a case apparently similar in every respect.

The remedy has been tried in numerous conditions, in both public and private practice, with the result that we find it useless in conditions attended with chronic inflammation or with exudation of cellular elements; for instance, acne rosacea, eczema, even in the most acute stages, for when the process has advanced a step further than the dilatation of the vessels and slight exudation, we have repeatedly failed to notice any amelioration of symptoms. We have faithfully tried to produce some improvement in cases of acute erythematous and papular eczema, which, on account of their symmetry and acute onset, offered every hope of success, but in none of them did we notice the slightest change.

The striking benefit resulting in some cases of the class mentioned first encouraged us to report these results, and for purposes of illustration, a few of them will be briefly cited.

*General Pruritus.*—If, as Unna says, pruritus is often caused by a lack of tone in the capillary vessels of the skin, due to weak heart-action, the suprarenal gland, from its influence upon the circulation is an ideal remedy. We have found it so in several cases of idiopathic pruritus, in which its administration has been of marked benefit.

In every case, in which its use has been at all effective, a control of the pruritus has been the first observable result.

*Chronic Urticaria.*—Many cases of chronic urticaria are purely factitious, being due to a peculiar congenital or acquired irritability of the dermal tissues which react to the slightest trauma, causing the development of a wheal. The antipruritic effect, as we might term it, of the suprarenal gland is probably one factor in its markedly beneficial action in certain cases of chronic urticaria. In our experience four cases were entirely relieved by five-grain doses of the gland, given three times daily, without the assistance of any other drug, internally or locally. The gland appeared to have a rapid, specific action, at once relieving the pruritus, and prevented the development of wheals. In one of these cases the disease had existed for one year, the patient having been tormented by the development of a crop of large and very itchy lesions upon the slightest friction. The suprarenal gland was administered for a month or more and the patient has remained free from unpleasant symptoms since, though her skin is yet, as it always has been, extremely irritable.

We are inclined to attribute the good results from the use of the gland in urticaria and allied conditions not alone to its effect in causing cardiac stimulation, or the increase of muscle and vasomuscle tone, but to the probable neutralization of some poisonous or deleterious substance within the system. This neutralization may be brought about in any of the various ways described by physiological chemists. Such a view most probably can be sustained by the study of its action in a disease, which is clearly due to vasomotor irritability, this irritability in turn being due to some peculiar systemic condition, as, for instance in

*Lichen Urticatus* (Bateman).—The condition which is known under the name of Lichen urticatus and best described by Bateman and Tilbury Fox, is probably a very chronic factitious urticaria of childhood. The lesions occur first as small wheals, the cap or top of which is immediately scratched off by the child, leaving, from the additional irritation and trauma, a papule which becomes hard from the vessel dilatation going on to a more advanced process of inflammation. In one of the worst and most stubborn cases of this kind that we have yet seen, the left leg and thigh were put in a zinc-gelatine bandage for one week; at the end of this time, the dressing was removed, and the entire extremity was found to be absolutely free from any lesions, excepting the remains of old ones, while the limb which had remained free was found to be literally covered with lesions in all stages of development. This demonstrated to our satisfaction the purely factitious origin of this troublesome disease.

We have treated eight cases of this form of urticaria in childhood with suprarenal gland with complete success. Its action in three of these cases was that of a rapid specific, controlling the eruption within two days. In all of the cases excepting one cures resulted; that is to say, the eruption disappeared, and if it relapsed, was at once controlled by again administering the remedy. One case did not follow the treatment as directed and for this reason probably was not benefited. We know of no other remedy which will produce such a rapid and beneficial result in this condition. The patient's general appearance in several cases seemed to improve and the skin resumed its normal tone; the pruritus was relieved and the vessels ceased to react so readily to mild traumata.

From our observations upon lichen urticatus we are led to assume that, through some peculiar "nutritional" disturbance, the vessels or their nerves are at all times in a certain irritable condition, which, in some way without friction or trauma to the skin, may cause a pruritus, and when the area is scratched or rubbed, this so-called irritability of the vessels or other nerves leads to an abnormal reaction, with the production of the lesion. Suprarenal gland seems to assist in the neutralization, or to prevent the production of the toxic agent producing this condition. It does not seem plausible to assume that its constringent action upon the muscle coats of the vessels or its direct effect upon the vasomotor nerves fully explains these results. Nevertheless, we were induced to try the remedy upon two cases of morphea, on account of this reputed effect upon the vessels, as both of these cases were remarkable on account of the extent of the violet areola about the patches.

In one case the redness about the patch was controlled and then disappeared while the gland was being administered; when its administration was stopped, the redness recurred. Thereupon the suprarenal gland was given at intervals for months. This case was one of those heretofore cited, which exhibited symptoms of a cumulative effect; however, the patient was closely watched for unpleasant symptoms, and the administration of the remedy was continued, as it seemed to control the disease and to cause the disappearance of active symptoms. This patient is still under observation, the disease being virtually well. He had two large patches of morphea, symmetrically placed on each side of the abdomen, and one in the center of the back. When we first saw him, the areas were each as large as the outstretched hand and were surrounded by a dull reddish-violet areola. At present faint, atrophic lines and a slight brownish discoloration mark the sites of the lesions. We do not wish to affirm that the drug in question was the only cause of the improvement in this case, as we know that such cases get well without any assistance. The second case of morphea was improving also, but the patient has not returned for six months.

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## ON SIMPLICITY IN THE OPERATION FOR LACERATION OF THE CERVIX UTERI.*

BY LOUIS KOLPINSKI, M.D.,
OF WASHINGTON, D. C.

LACERATION of the cervix uteri is the commonest cause of postpartum hemorrhage. The immediate union of such a tear is not here discussed. Old laceration is the direct subject. This, however long it may have existed, produces no sure or significant symptoms, local or reflex, by which it can be suspected or recognized. It plays an active rôle in causing abortion and miscarriage and the very prevalent opinion that it often becomes the nidus for epithelial cancer is the chief cause of the great importance attached to its cure.

For natural reasons tears of the cervix are extremely common. They are diagnosticated by digital palpation and the introduction of the speculum.

Admitting the propriety and necessity of repairing this form of genital injury, when no more urgent disease exists or where there are no contraindications, it may be maintained that the greatest good will accrue to the greatest number when the successful operation is devoid of danger and shorn of its usual terrors.

These cervical tears of all surgical disease or injury are the most inviting and satisfactory to treat on the basis of greatest simplicity. The reasons for this are the following: The normal sensibility of the cervix uteri is probably not much greater than that of the gums and anesthesia, either general or local, is entirely unnecessary. The operation consists solely in denudation, apposition and retention of approved surfaces and requires no great surgical skill, technic or trained assistance. A minor plastic operation not prone to become a failure from ordinary bodily exercise, confinement is not required for more than a few days. The patient during the period of union enjoys the comforts and freedom of her own home. There is but one great after essential for success, namely, the non-infection of the wound.

To perform this operation under these conditions the writer proceeds in the following manner, and he will state that the only difficulty encountered is the amount of explanation and assurance often found necessary to be expended in order to convince the patient that the pain is trivial and that benumbing agents are needless.

The subject lies in the dorsal position on a table with the parts involved directly in the light from a window. The neck of the womb is exposed with one or two blades of Simon's speculum. The anteroposterior poles of the cervix are secured with narrow volsella forceps. By traction they bring the uterus downward to be sufficiently accessible for work. They also outline the diameter of the restored canal. The torn lips are denuded on both sides with scissors; but little tissue is cut away. The prepared surfaces should be smoothly raw and bleeding freely. From two to three silkworm-gut sutures are inserted on each side with a curved Brun's or perineum needle. After irrigating the wound and dusting it with iodoform, the sutures are securely tied and cut short. An antiseptic tampon is introduced against the neck of the womb and the patient placed in bed. In a day or two the tampon is removed and voluminous boric acid douches are practised until the removal of the sutures in three weeks. In three or four days or a week at the longest the patient is allowed to rise daily and pursue her usual mode of life, being solely enjoined from unusual effort or the harder forms of female employment. The result in a good termination is a uterine cervix, which in appearance is very like the virgin state. When partial or total non-union is found it is an easy matter to obtain the patient's consent to repeat the operation as before practised. The writer has followed this method in more than a dozen cases and in no instance has the course or result been found unsatisfactory.

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* Read at the Meeting of the Therapeutic Society of the District of Columbia, February 14, 1903.

In calling attention to the ease and certainty with which a lacerated cervix can be made whole, the objects in view are that its proper subjects may be given a rational and common sense understanding of what is alone necessary to repair the injury and prevent future mishap or disease. How little or not at all are the dangers of the operator's work and with what slight restraint, loss of time and expense, the same can be done in their own homes and family surroundings. Above all that the amount of pain inflicted is so little that no anesthetic need be used.

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## TUBERCULOSIS OF THE LARYNX AND ASPIRATION TUBERCULOSIS OF THE LUNGS FOLLOWING DERMATITIS BLASTOMYCETES.

BY OTTO T. FREER, M.D.,
OF CHICAGO, ILL.

The cases of dermatitis blastomycetes, or infection of the skin with pathogenic forms of yeast fungi reported to the present time show that it is so seldom followed by tuberculosis that the sequence of the latter upon it may be merely a coincidence.

The total number of cases of blastomycosis collected is too small to permit of conclusions in regard to this question and it is therefore of interest that the case reported to-night adds one to the list of blastomycotic infections followed by tuberculosis. Dr. Frank Hugh Montgomery[*] in his summary of his own and Dr. James Nevins Hyde's observations on cutaneous blastomycosis, states that among 32 cases gathered from the literature, one, his own, died of miliary tuberculosis and that two other patients presented symptoms merely suggestive of tubercular disease, while the remainder were free from it. My own search in the literature failed to add to the list of tubercular cases following blastomycosis.

Dermatitis blastomycetes seems to have obtained recognition as a disease entity among the majority of observers. This is due to the painstaking and scientific work done by Hyde, Montgomery, Busse, Buschke, Gilchrist and others. As Dr. Montgomery intends to publish a detailed account of the cutaneous affection in the case reported here I shall confine myself to a description of the unusual course of the tubercular disease following it.

History: Date Oct. 17, 1901. The patient's age is 25 years. His history presents nothing of note with the exception of a chancroid acquired ten years ago. The only possibly luetic symptom succeeding this was a sore mouth which lasted a month.

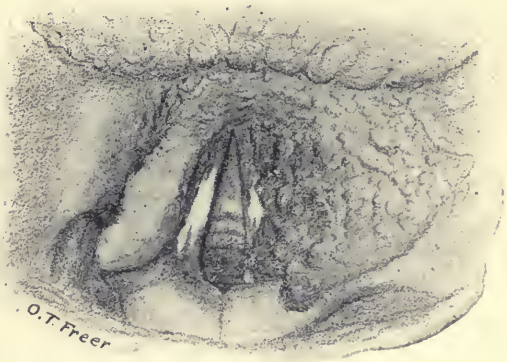
His present trouble began two years ago with the appearance of a skin affection in front of his left ear over the zygomatic process. The eruption, as he describes it, was in the beginning only as large as the end of his finger, was at first red and later became covered with a scab. When this was removed he says that the surface underneath looked ulcerated and as if perforated with pinholes. The scabbing skin affection slowly spread until it presented a raised surface as large as the hand of a child. Under Mr. Montgomery's care almost complete disappearance of the eruption was obtained by means of large doses of potassium iodide, a drug which has an almost specific effect upon the lesions of blastomycetes.

Dr. Montgomery made the diagnosis of dermatitis blastomycetes by means of microscopic sections and cultures and by repeated examination of many slides demonstrated the absence of tubercle bacilli.

Four and one-half months ago the patient noticed a tickling sensation in his throat which gradually changed to slight pain in swallowing, This symptom left him after a few weeks, but returned and became more and more severe until on Sept. 12, when first seen by me in the clinic at Rush Medical College, he could hardly swallow fluids and no solids at all. Attempts to swallow caused suffocative coughing spells so that he dreaded to eat and drink. Up to the middle of August his voice remained unaffected, when gradually increasing hoarseness set in. This remained until the middle of October, when it changed to a mere whisper within two days and has remained so since. When first seen the patient was not emaciated, seemed in good general health and said that he did not think that he had had fever at any time. Examination of the lungs at this time showed healthy signs and there was no cough.

When first seen on Sept. 12, the skin affection mentioned occupied the anterior half of the left concha, the meatus auditorius externus and an area extending from the level of the eyebrow down to the lower border of the lower jaw and followed to the centre of the cheek. It had a deep red color and was covered with crusts that so filled the ear that hearing was impaired. Inspection of larynx presented the conditions shown in the drawing sketched from life. (Fig. 1.) An extensive ulcer occupied the site of the epiglottis which was destroyed all but a small stump at its

Fig. 1.



Tuberculous Ulceration of the Larynx with Destruction of the Epiglottis.

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[*] Cutaneous Blastomycetes, Journal A. M. A., June 7, 1902.

posterior and right border. The ulcerated surface also involved the left aryteno-epiglottic and pharyngo-epiglottic folds and the surface of the false cord on the left side. The vocal cords were deep red in color but normal in form. Quantities of thick muco-pus covered the ulcer and filled the laryngopharynx and upper larynx. When the secretion was removed the ulcerated surface was seen to be covered with granulations while its borders were clean cut without surrounding edema. The pharynx and mouth at this time were normal. During the latter progress of the ulceration the left cord became immobilized and granulations sprouted from the left processus vocalis. The border of the soft palate, the uvula and the pillars of the fauces on the left side became red and infiltrated. Shallow erosions with a white surface appeared on the under surface of the tongue and smaller ones on the pillars and soft palate.

The ulcer at the first examination seemed almost typically syphilitic because of its well defined border, rapid progress and quick destruction of the epiglottis while the parts of the larynx below were at first not involved. The patient's good general health argued against a tuberculous process as did the lack of chronic edema of the larynx. The absence of a hard infiltrated border and base excluded the likelihood of carcinoma. The patient was, therefore, given large doses of potassium iodide. Very rapid subjective improvement followed and seemed to confirm the diagnosis of syphilis. The pain in swallowing ceased after a few days and the patient stated that food no longer entered his windpipe, but the betterment was evidently suggestive and the ulcer steadily spread while the pain returned. The cutaneous lesion, however, began to heal quickly under the influence of the iodide of potassium and in a few weeks cicatrized all but some scabbing portions on the border. This is the usual effect of the drug on the lesions of blastomycetes. At this time great quantities of tubercle bacilli were found in pus swabbed from the ulcer while sections made from a piece of the epiglottic stump removed with Heryng's double curette were seen to be invaded by tubercle bacilli in such numbers as are seldom seen within the tissues, (Fig. 2) the diagnosis was therefore changed to laryngeal tuberculosis.

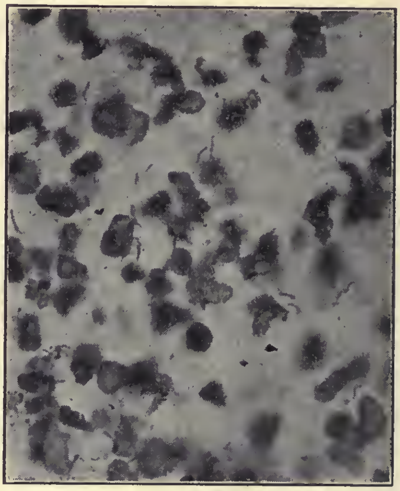
At this time, Oct. 20, the patient began to have fever, ranging from 99° to 103° F., with emaciation and rapidly increasing weakness. His chief complaint was of exhaustion and a constant sense of suffocation which amounted at times to extreme distress. The physical signs could not account for this as they were negative with the exception of scattered sibilant râles and some mucous clicks with diminished respiratory murmur over the left apex. The patient died on Nov. 23, about 5½ months after the beginning of the tubercular disease in his throat.

The post mortem was performed by Dr. E. R. Le Count, from whose minute and extensive report, obtained from the pathological laboratory of Rush Medical College, I have abstracted the essentials.

In the right pleural cavity adhesions were found at the apex of the lung, in the left one at the apex, base and posteriorly. Over the entire surface of both lungs small hard nodules were felt which elevated the pleura. They were largest in the apex and upper part of the lower lobe of the right lung, and were pale, elevated, grayish and in many places coalescent. The fissure between the upper and middle lobes of the right lung was obliterated by firm adhesions. On section the lung showed many nodules similar to the subpleural nodules scattered diffusely through the tissue. In many places these coalesced. A small cavity and smaller ones of the size of buckshot were found in the apex of the left lung.

The larynx showed the loss of the epiglottis and ulceration described above. The right cord and both arytenoid cartilages were movable but the left cord was thin and bound down by cicatricial tissue, and this accounts for its immobilization. There was ulceration of the lining of the left ventricle of Morgagni, on the upper surface of the left cord and ventricular band. The surface of the large ulcer which had destroyed the epiglottis contained cicatricial tissue mingled with granulation tissue. There was no evidence of perichondritis.

Fig. 2.



Tubercle Bacilli Grouped in the Tissue of the Epiglottis.

Many miliary tubercles were found in the liver, spleen, adrenal bodies, mediastinal and mesenteric lymph glands. Sections from all of these organs and from the lung tissue were stained and the presence of tubercle bacilli demonstrated. Cover slip preparations from pus obtained from the lung also showed tubercle bacilli in enormous numbers.

Three guinea pigs were inoculated with tissue from the adrenals and lung. The result in two of these animals was negative as far as tuberculosis was concerned as they died in a few days before it had time to develop. In the third pig general miliary tuberculosis had developed after six weeks.

Dr. Le Count's summary was: Tuberculosis of the larynx; aspiration disseminated miliary tuberculosis of both lungs; ulcerative tuberculosis of both apices; miliary tuberculosis of the kidneys, adrenals and liver; ulcerative tuberculosis of the small intestine; acute lymphadenitis of the mesenteric and tracheobronchial glands; fibrous pleuritis; blastomycetic dermatitis of the face.

The hope entertained by Dr. Montgomery and myself that the blastomycetic organism would be found in the tissues of the larynx and in other parts of the body were not realized. Montgomery's statement, therefore, that blastomycosis has not as yet been found upon the mucous membranes of the body still holds good. It is probable that the long-continued blastomycetic ulceration of the face was the source of entrance of the tubercle bacilli into the lymphatics and later into the tissues of the larynx and base of the tongue. This seems the more likely, as the greatest ulceration in the larynx was upon the left side.

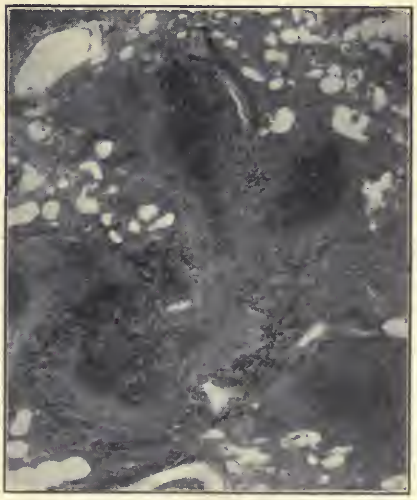
The microscopic sections made from the piece of epiglottis removed during the patient's life were prepared by Dr. Oliver S. Ormsby, who studied them with me. They showed the great intensity of the tubercular infection. As a rule sections of tubercular tissue show but scattered bacilli, often none can be found, but in these specimens they may be seen lumped in clusters and scattered profusely among irregular groups of leucocytes and epithelioid cells. The bacilli are thickest in the leucocytic groups which resemble miliary abscesses. Other sections show ordinary miliary tubercles with central giant cells. P. Baumgarten*, in an exhaustive consideration of the histologic action of the tubercle bacilli, says that when large numbers of bacilli of extreme virulence produce infection the miliary tubercle may resemble a miliary abscess, as the stage of infiltration with leucocytes occurs almost immediately without more than a rudimentary attempt at the formation of the epithelioid and giant cells from the fixed tissue cells. Therefore, a microscopic section like those we obtained from the epiglottis, showing these characteristics. indicates an acute and malignant type of tuberculosis. The rapid spread of the disease in the organism depends not only on the susceptibility of the individual attacked but also upon the number of the bacilli invading the tissues, their greater or less virulence and, hence, varying rapidity of proliferation. As my patient was a vigorous man it is probable that his resistance was good and that he was infected with a peculiarly active type of tubercle germ, which invaded the tissues in enormous numbers.

The tubercular invasion of the lungs was more recent than that of the larynx and occurred in the acute disseminated form called aspiration tuberculosis. The early destruction of the epiglottis together with the great quantity of semi-fluid pus swarming with tubercle bacilli produced by the large area of ulceration were important factors in causing the almost explosive pulmonary invasion. Without the epiglottis to protect the air passages below, pus, food and drink constantly entered the trachea and bronchi and particles were readily sucked into the smallest air tubes where they caused tubercular bronchitis, peribronchitis and bronchopneumonic areas. From these the infection was readily spread by means of the peribronchial, interlobular and intralobular lymphatics.

Ziegler* mentions, as sources of aspiration, tuberculosis inspiration of tuberculous matter from bursting of a softened tuberculous lymph gland into a bronchus, or of pus from cavities in the lung, or of tuberculous pus from laryngeal ulcers. Ziegler says that, though the aspiration type of infection in tuberculosis is not common, there are instances on record where aspiration has suddenly infected the whole of both lungs and the virulent particles have penetrated every ramification of the bronchi. The usual site of lodgment of the infecting particles, according to Orth†, is where an end bronchus divides into the alveolar passages. The tubercle first develops in the walls of these finest air tubes but rapidly invades the surrounding alveoli.

In order to prove that the infection of the lung, in the case under consideration, was primarily bronchial and later peribronchial and alveolar, series sections of lung tissue were made for me and studied by Mr. J. W. Dreyer, a senior student at Rush Medical College. As the result of his investigation a small bronchus (Fig. 3) was discovered, was followed into its end branches through several sections and showed plainly that the tuberculous process began in the lumen of the small bronchi and followed these into the terminal

Fig. 3.



Bronchus Destroyed by Caseous Bronchitis Due to Aspiration Tuberculosis.

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* P. Baumgarten, Berliner klinische Wochenschrift, 1901, p. 1102.

* Ziegler, Text-book of Path. Anatomy, Am. Ed. pp. 843 to 858.

† Orth, Lehrbuch der speciellen pathologischen Anat., 1887, p. 473.

branches and alveoli. It was also evident that the alveoli adjacent to the bronchioles were invaded by direct extension of the tuberculous infiltration through their walls, that is by tuberculous peribronchitis.

The bronchus mentioned has lost all that is typical of the normal histological structure but may be recognized as a bronchus by its division into branches. Its lumen is greatly distended by a necrotic, caseous mass, which is surrounded by a circle of cells whose axis is directed across its center and which probably formed the bronchial epithelium, but can no longer be recognized as such. Surrounding these cells may be seen circular elastic fibers and outside of this the tuberculous cell proliferation has hidden all alveolar structure over a large area. Beyond this again the alveolar structure becomes recognizable, many of the alveoli being filled with blood, others distended with leucocytes, indicating bronchopneumonic areas. Many circular or oval spots of cheesy degeneration were visible over the entire area of the sections, showing exactly the same structure as that of the bronchus mentioned. They were surrounded by the same tuberculous tissue and also marked the site of destroyed bronchi with tuberculous peribronchitis. In places leucocytes were seen gathered into collections like miliary abscesses, showing the great virulence of the tuberculous process. Large giant cells were frequently found.

Looking at the slides with an ordinary convex lens gave a better general view of the process than did the microscope. The centers of the masses that filled what were once the lumina of the smallest bronchi were stained red while about them the rest of caseous matter contained in the bronchi formed a pale circle.

The blood-vessels were intact, another evidence that the process was aerogenic. The great number of bronchioles and lobules stopped up by the tuberculous process explain the patient's sense of suffocation, while the even distribution and smallness of the nodules explain the scanty physical signs.

Doubtless aspiration tuberculosis is a frequent termination of tuberculous laryngitis even where there is an older focus of tuberculosis in the apex of a lung. I can recall other cases where laryngeal tuberculosis ended rapidly with the lighting up of quick pulmonary consumption. The rigidity of the epiglottis usual in advanced laryngeal phthisis favors the entrance of tuberculous pus into the lungs.

A. Fraenkel*, mentions the aspiration of blood flowing from a tuberculous pulmonary cavity during hemoptysis as a cause of dissemination of tubercle bacilli throughout the lungs and the development of acute aspiration tuberculosis. His description of the anatomical findings in cases of rapid tuberculosis of pneumogenic origin accords perfectly with the post-mortem findings in the lungs in the case described.

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*A. Fraenkel. Berliner klin. Wochenschrift, 1902, p. 491.

## MEDICAL PROGRESS.

### THERAPEUTICS.

**Treatment of Hay Fever.**—With the advent of the season, the usual crop of papers on the subject is beginning to appear. Sir PHELIX SEMON (Brit. Med. Jour., March 28, 1903) presents an article peculiarly concise, interesting, and to the point. It deals with the results obtained by Prof. W. B. Dunbar, the Director of the State Institute for Hygiene of Hamburg. It will be remembered that this gentleman succeeded in isolating from the pollin of certain grasses a toxic substance which seemed to bear a very direct relation to the cause of hay fever. The author conducted a series of experiments in the course of which he isolated the toxins and produced antitoxins from thoroughbred horses and used them upon himself and eight other people. He draws the following conclusions: First, that there can be no doubt that Professor Dunbar has succeeded in isolating a toxin which when introduced into the eyes or nostrils of people predisposed to hay fever, produces the well-known symptoms of the disease. In people not predisposed, the result is negative. In persons already suffering from hay fever, the effects of the toxin are as variable in intensity as are the attacks of the affection itself, both locally and constitutionally. Prof. Dunbar's antitoxin certainly produced immediate disappearance of the subjective and after a few minutes, great amelioration of the objective symptoms. The mixture in equal parts of a toxic solution (1 in 500) and the antitoxic serum suffices to neutralize the specific effects of the toxin. The effects of the antitoxin appear in some instances to be sufficient to prevent a reappearance of the subjective symptoms. In other instances, repeated installations of it are necessary to reproduce normal conditions. At the present moment we are only on the threshold of an accurate knowledge of this condition, and while we do not emphatically state that we are shortly to be able to give absolute relief to sufferers, it is conservative to say that sufficient work has been done to justify broad statements in that direction.

**Treatment of Hyposystolia with Anasarca.**—In a case in which the heart was much embarassed, owing to the peripheral resistance from capillary and venous stasis, brought on by pressure upon the walls of the small vessels from an extremely edematous condition of the tissues, C. TREVISANELLO (Policlin., March 21, 1903) obtained great relief for his patient by using Southey's method of draining off the transuded fluid from the lower extremities. He describes the procedure in detail as follows: The patient is seated upon the side of the bed, with the legs hanging down. In the upper third of each leg, from one to two trocars, carrying silver canulas twenty-one millimeters long and thirteen-tenths of a millimeter in diameter, are inserted. The trocars are then withdrawn, leaving the canulas in situ. Rubber tubes connected with suitable receptacles for the fluid are then attached to the lower openings of the canulas, and the flow of fluid through the latter is started by gentle massage or compression of the leg. In the case so treated, dyspnea ceased, the pulse became stronger, and the general condition greatly improved after each draining. The procedure was repeated in all six times; the amount of fluid withdrawn varying from 500 c.c. to 1700 c.c. In the intervals between the local treatments, digitalis was given; this acting well upon the heart after lessening of the peripheral resistance through the decreased edema following withdrawal of the transudate, though previously it had failed to relieve. Mild purgation was also used to assist in the dissipation of fluid from the tissues.

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## SATURDAY, MAY 30, 1903.

### EDEBOHLS' OPERATION.

AT the recent meeting of the Association of American Physicians in Washington (See MEDICAL NEWS this week, p. 1049), as the result of the report of a successful case of removal of the kidney capsule for chronic parenchymatous nephritis by Dr. Tyson, of Philadelphia, there was an interesting discussion showing the present status of the operation suggested by Dr. Edebohls some years ago. As was well said, the therapeutics of chronic nephritis is so hopeless from a medical standpoint that any surgical procedure that holds out the promise of even amelioration of symptoms for a time with retardation of the progress of the case would be extremely welcome. If it does not involve, and Edebohls' operation does not, necessarily any serious risk in its performance, then it is sure to attract the attention of even the most conservative members of the medical profession.

In Dr. Tyson's case, the patient was suffering from chronic parenchymatous nephritis following scarlet fever. Anasarca was very marked and the patient was confined to bed and was constantly growing weaker. Every possible expedient for alleviation by medical means having been tried in vain, the operation of stripping the capsule from the kidney was consented to by the mother. The operation was done in two stages, one kidney at a time, two months apart. There was marked improvement after the first operation, and after the second operation the urine became practically normal. Before this there had been considerable amounts of albumin and quite a few tube casts. As soon as the child was allowed to get up and go around the albuminuria returned to a certain extent, but the patient's general condition continued to be eminently satisfactory. The edema of the extremities and of the face, as well as the ascites, disappeared completely after the first operation and did not return. The patient has gained in weight and strength and is considered by her relatives to be cured of her kidney trouble, though there are still some traces of it, as shown by the albumin in the urine.

In the discussion three cases were reported from Boston, two of them as successful as the Philadelphia case. One of the operations proved a failure, the patient dying from nephritis six months after its performance. In this case at autopsy complete regeneration of the capsules of the kidneys was found to have occurred. Another successful case in a patient suffering from chronic parenchymatous nephritis following scarlet fever was reported from Toronto. It is evident then that the operation is attracting widespread attention and that the operative results in certain cases which have proved absolutely hopeless under the most careful medical treatment have been eminently satisfactory.

The operation seems specially advisable in young persons suffering from chronic nephritis following scarlet fever. As there is a growing impression that many of the insidious cases of Bright's disease which show symptoms unexpectedly about middle life are due to an almost latent nephritis initiated by scarlet fever, this is a very interesting consideration. Whether the albuminuria that persists after operation will prove to be really indicative of a progressive nephritic lesion remains to be seen. It is well known from the statistics of life insurance companies in recent years that while applicants suffering from albuminuria without casts or with only hyaline casts are more likely to be carried off by intercurrent disease than other individuals, they are by no means necessarily doomed to early death from Bright's disease. If the operation will relieve the severer symptoms of ascites and anasarca with the indigestion consequent upon progressive uremia, even though it should not arrest the albuminuria entirely, there seems every reason to hope that it will fulfil much of the promise that has been made for it.

At the same meeting a series of experiments on dogs was reported, in which decapsulation of the kidneys was promptly followed by regeneration of the capsule. In the one unsuccessful operation reported from Boston this same regeneration of the capsules was found at autopsy. It is possible that certain points in the technic of the operation, or its performance in particular ways may prevent capsular regeneration and so give all the benefit to be derived from direct adhesion of the kidney to other structures without the intervention of the fibrous capsule. It is evident from reports so far made that the benefit derived in these cases is not due, as in certain of Mr. Reginald Harrison's analogous operations for acute nephritis, to any relief of function tension in the kidney by the slitting of the capsule, since in practically all the cases thus far operated upon it is distinctly noted that no such tension could be demonstrated as present. It seems more probable that the theory of the new blood supply furnished to the kidney by the adhesions formed after decapsulation is the real explanation of the successful results so far obtained. The appearance of fat in the urine immediately after the operation and also the ready absorption of substances painted on the decapsulated kidney show that kidney tissue is readily permeable from without its substance as soon as the fibrous capsule is removed. There seems every reason to look forward with confidence to the further development of this operation with the idea of finding the limits of its application and the cases in which a good prognosis from its performance can be reasonably predicted. So far those who have taken up the operation have been commendably conservative in their methods, and while its application mainly to cases that were otherwise hopeless and, indeed, sometimes almost moribund, makes an extremely severe test for the new operative procedure, it has justified not a few of the expectations even under those trying circumstances. It would seem that the operation will eventually achieve for itself a distinct place in the therapeutics of an otherwise constantly progressive and ultimately fatal affection, that at the present time is inexorably cutting off some very promising lives.

## MEDICAL LICENSING BOARD QUESTIONS.

This is the season of the year when the medical licensing boards of the various States are preparing the questions for the June examinations. As it is at the examinations at this season of the year that by far the greater majority of the medical graduates apply for licenses, it seems a fitting occasion to say another word with regard to the character of the questions that have been asked in the past with the hope of bringing about an improvement in this important matter. There is no doubt that in spite of the numerous protests that have been made by some of the most prominent medical teachers, and even the faculties of medical colleges, there are still entirely too many unsuitable questions, often mere "catch" questions, included among the examining boards' lists each year.

The President of the National Confederation of State Medical Examining and Licensing Boards, in the course of his official address at the thirteenth annual meeting of this association, held at New Orleans, May 4, 1902, gave a list of some questions which he considered had been answered very ludicrously by medical students in recent years in his own experience. We hope that those who listened and laughed at the presumedly ridiculous answers to these questions were not entirely in sympathy with the character of the interrogatories as stated. Practically all of the questions over which the worthy president was so hilarious were of the kind which to our thinking should not be found at all among the list of questions to be asked either of the graduate medical student or of the physician of many years' standing with any idea of determining his practical fitness for the exercise of the profession of medicine.

In the Medical News for May 9, 1903, p. 897, will be found some of the questions that were answered ridiculously. One of them is, "What is Morbus Cæruleus?" Since the New Orleans meeting we have asked three medical editors, all of them actively engaged in the reading and criticism of medical articles for publication, and all of them have hesitated as to the answer they would make to this question. Now, medical editors may not know the practice of medicine. There are those who ungenerously insist that it is better for a medical editor not to know too much about the practice of medicine, since this is almost sure to spoil his faith in medical theory and hurt his power to write confident editorial opinions with regard to practical application of remedial measures. Medical editors do, however, know the meaning of words. They must necessarily, if the columns of their journals are not to be disfigured by verbal errors. Morbus Cæruleus, as the name for congenital cyanosis, due to congenital malformation of the heart, is not a commonly employed term, and besides it is not a commendable designation. The affection is not a disease entity to which the name morbus would properly apply. Morbus has etymologically the sense of an acquired pathological condition, and does not well represent a permanent state due to an enduring anatomical anomaly. When the familiar "blue baby" becomes metamorphosed into the subject suffering from morbus cæruleus, it is a little difficult of recognition, even by those who may be quite familiar with the condition by actual experience. Unless one has heard the term employed in just that sense, one is at sea as to what is intended by it.

Other questions suggested by the President of the National Confederation of State Medical Examining and Licensing Boards, as ludicrously answered, are, to our mind, quite as unjustifiable examples of this tendency, unconscious though it may be, to ask catch questions. For instance, Cheyne-Stokes breathing is really of too little clinical importance to make a question with regard to it count for one-tenth in the examination of a medical student's knowledge of practical medicine. Unless he is a physician engaged in very active hospital practice in large cities, the practitioner may not see a case of Cheyne-Stokes breathing in many years. What is more, when he does see it, his recognition of the symptom complex will usually not be of any material help to him in the treatment of his patient, since sufferers are commonly doomed to speedy dissolution. The question, What is podagra? seems scarcely a suitable one to ask of would-be practitioners in America. We have learned quite recently that gout is more frequent in this country than we were accustomed to think, but this knowledge has only come to the teachers of medicine within the last year or two. While the word podagra is familiar enough in England, it is very seldom used in this country. Besides, it is not a complete descriptive term for gout, since gout affects other parts of the body, notably the fingers and ears, quite as frequently as the feet. Why not have asked the question simply, What is gout? We sympathize sincerely with the medical student who mistook podagra for the equally unfamiliar pellagra, and answered that it was poisoning due to the ingestion of rye bread that had been affected by disease.

While we have picked out the flagrant examples cited at New Orleans, because the failure to answer them on the part of the medical student was a subject for merriment on the part of examiners assembled, and was supposed to indicate a lack of proper training at medical schools, we would not wish to be considered as thinking that any one man is more responsible than many others for the frequent peculiar questions that find their way into the examination papers of State licensing boards all over the country. In the last few years such questions have been asked as, What is Laennec's cirrhosis of the liver? What is Hanot's cirrhosis of the liver? and in spite of the priority of the English observer in the matter, describe Basedow's disease, instead of the better Graves' disease, if a man's name has to be used or the descriptive title exophthalmic goiter. We realize, of course, that it is not easy to pick out suitable questions and yet avoid repeating questions that have been asked in recent years, and have for that reason been specially "boned up" by those who are studying only to pass, and with regard to whom Huxley once said, "They study to pass and not to know, and outraged nature takes her revenge—they do pass and do not know." Medical examiners are well paid for their services, and so should be expected to accomplish this difficult ta[illegible] satisfaction.

We have spoken only of the questions asked in the practice of medicine, because surely in this department at least there is no need to look for far-fetched questions. If there are abuses here, how much more likely are they to occur in the theoretic sections. There is need for the most zealous care on the part of examining boards to prevent abuses creeping in in these matters that distinctly lessen the prestige of the medical licensing system. Legislators are only too glad to have an excuse to refuse the extension of protection to the medical profession, and complaints of this kind made by medical teachers are apt to have an effect beyond the sphere of the matter actually involved.

## HURRY AND IRRESPONSIBILITY IN MEDICAL EDUCATION.

A suggestive and almost pioneer article (entitled "How Can the Standard of the Medical Profession Best Be Raised?"), in a recent number of *American Medicine,* advocates the lengthening of the medical course to at least six years. The need for this advance in medical education the author finds in the obvious fact that already an unseemly and most unscientific sense of hurry pervades every live medical school, while, more disquieting still, medical science is now developing and spreading far beyond the possibility of being by any means whatever encompassed in any three-year or four-year course. Adequate and dignified knowledge of medicine, and certainly all real medical wisdom, is, it is claimed, by this disastrous *rush* made quite rare and in the generality of colleges quite impossible.

Now this appeal certainly is a timely and perhaps prophetic entreaty not only for more time, more thoroughness, and more dignity in preparing for the life-practice of a profession than which none is more serious or more dignified, but it touches on a matter or two besides on which one hears and reads even less than on the inevitable doubling of the length of the medical course. Thus the author pleads for some sort of personal acquaintance with the candidates for the medical degree, for a partial and adapted return to the preceptor system, now with our modern educational methods, going out of use. Two reasons may be suggested why every medical student who expects to practise should be personally known to and guided by some competent, broad-souled representative or other of his faculty; one reason being that his labors thereby may be adapted to his individual needs and tastes, the other that the officers of the college may be reasonably sure before he is let loose on a more or less innocent public, that the candidate is morally fit to become the arbiter of life and death over a portion of the people and curator of the morals of many more. Medical students need much more personal and individual attention than they get, for obvious reasons; why they do not get it is scarcely less obvious.

This is the period, in our civilization, of the rapid invention and introduction of machines for making things easily and quickly which were formerly made laboriously by hand,—our ancestors of even two generations ago knew nothing of machine-made shoes and less, oh shades of Æsculapius, of machine-made physicians. Alas for the medical educational "quick-lunch," which gives no manner of time for the digestion of the scientific viands which are acquired and which even allows no choice, scarcely of any sort, to its unsuspecting patrons. The young and the old, the dyspeptic and the hearty, the mentally fat and the mentally lean, the active and the idle, the man and the woman, each must eat what is on the bill of fare and pay for it, or, leaving it, go on hungering for the medical-science food which they so properly and wisely crave. Rush 'em through and turn 'em out to digest or to indigest, as their multitudinous constitutions warrant! Hurry them through and grind them out all alike in the same sort of mill with the same energy and hurry of resistless swirl and breaking,—and that when no two mothers' sons of all the yearly thousands are anywhere near alike and very many as opposite in capabilities, in interests, in promise, in intentions, as their psychophysical uniqueness can make them.

The other part of the problem demanding some sort of personal surveillance over medical students is of a different nature but it comes in part from the same causes and has like importance in medical economics and in the profession's honor. Some means, it is apparent, should be devised so that medical faculties might really know the students and refuse to graduate those of them who are unfit to assume the responsibilities of the physician. One method or one aid in doing this would be to lengthen the course, thus allowing of smaller quiz and demonstration and laboratory classes with the greater consequent personal familiarity between instructor and student.

This latter question is not in any sort a matter of religion, and need not be put even on a basis of ethics. It might be handled as purely a matter of business on a business basis, for whatever increases the public's respect for and confidence in the medical profession will increase not only the life-long satisfaction in being a member of that profession but oftentimes its monetary rewards, more or less, as well. Above all these considerations, the honor of the profession is debased when the medical graduate, despite his Hippocratic oath and his acquired dignity, deserts the standards of his profession, publishes his opinions as opposed to animal experimentation, or to vaccination, becomes a quack, or in other ways seeks wealth at the expense of the general medical esteem. This is the phase of the matter which raises the demand for personal scrutiny of the underlying character of medical students to an insistence almost imperative. The medical school which shall first show the moral and mental vigor to announce requirements and selection in this direction at the risk of being called names for a while, will soon welcome a multitude of the best of students for its own reward and will lead the way where all the other colleges will soon see fit to follow it.

**Obligatory Disinfection After Death from Tuberculosis.**—In the city of Budapest, disinfection after death from tuberculosis has been made obligatory.

# ECHOES AND NEWS.

## NEW YORK.

**Medical Libraries.**—The sixth annual meeting of the Association of Medical Librarians was held Saturday, May 16, 1903. A large number of librarians and physicians representing the medical libraries throughout the country assembled in the morning at the Library of the Medical Society of the County of Kings, Brooklyn, N. Y., and after an inspection of the building were entertained at luncheon at the Union League Club by the local members, Dr. William Browning, Dr. J. M. Winfield and Mr. A. T. Huntington. The scientific session was held in the afternoon at the New York Academy of Medicine, the President, Dr. William Osler, in the chair. Papers and discussions were contributed by Mr. C. P. Fisher, of Philadelphia; Dr. T. C. Lee, of Minneapolis; Mrs. G. W. Myers and Dr. E. H. Brigham, of Boston; Mr. J. S. Browne and Dr. W. S. Dennet, of New York; Mr. A. T. Huntington, of Brooklyn, and others. The officers elected for the ensuing year are as follows: President, Dr. William Osler, of Baltimore; Vice-President, Dr. Abraham Jacobi, of New York; Secretary, Mr. Albert T. Huntington, of Brooklyn; Treasurer, Dr. George D. Hersey, of Providence; Executive Committee, Mr. John S. Browne, of New York; Mr. Charles P. Fisher, of Philadelphia; Dr. James M. Winfield, of Brooklyn; Manager of the Exchange, Miss M. C. Noyes, of Baltimore. The meeting adjourned to meet June, 1904, at Atlantic City, N. J. A full report of the proceedings of the meeting will be published in the *Medical Library and Historical Journal* for July, 1903.

**Tent Hospital for Consumptives.**—A number of the patients in the wards of the city's tuberculosis infirmary, on Blackwell's Island, began the open air treatment last week. To this end several tents specially constructed for the accommodation of the sick have been erected on the lawn of the Metropolitan Hospital. They are provided with wooden floors, and a wall of the same material rising to the height of three feet surrounds them. The tents are made from heavy canvas, and by the use of stoves an equable temperature can be maintained in any weather. Canvas flaps serve the place of windows, and are so distributed that the maximum amount of sunlight can enter. The porous cloth permits the passage of a constant current of fresh air. This method of securing for the patient fresh air and sunlight, prime factors in the cure of consumption, is the ideal one. This is the first hospital camp in this country established at municipal expense, although the form of treatment has been in vogue in Europe for years. The most gratifying results have invariably followed its employment, a large percentage of the patients ultimately recovering. The earnest work of the Charity Organization Society's Tuberculosis Committee is largely responsible for the present experiment. Of the 400 patients now occupying the wards of the tuberculosis infirmary, it is expected that at least 100 will be under canvas within a month. The patients are delighted with the prospect of exchanging their residence in the hospital for the tent life. Each tent will accommodate but a small number of persons, and these can group themselves according to their tastes and inclinations. Not the least important factor in the light and air treatment is the solarium, or glass house, which is to be speedily erected. Here the patients can take daily sunbaths. The tents themselves will be occupied as late in the season as the weather will permit. This miniature hospital camp is but the initial step looking toward the establishment of a similar institution on a gigantic scale. The health authorities have been offered a twenty-acre tract in Orange County rent free for two years for that purpose, and Dr. Lederle has already addressed a letter to the Mayor for municipal assistance to carry out the project.

**Manhattan Dermatological Society.**—Regular meeting held May 1, Dr. L. Weiss presiding.

Dr. L. Weiss presented the following cases: (1) Lupus erythematosis in a woman about thirty-six years old; the bridge of the nose, adjacent cheeks and naso-orbital angle affected; patient under treatment for the past three months, with no decided improvement, along outer edge of eruption new and distinct nodules were observed. Dr. Gottheil spoke favorably of Finsen therapy; he was able to discharge three cases cured out of four so treated; (2) a case of fibromæ cutis, in a woman thirty-six years old; the tumors varied in size from a pinhead to a quarter coin; the face was likewise involved; back and chest were studded with varying size tumors; the largest tumor was on the right thigh; thyroid and thiosinnamine were suggested for treatment; (3) a case for diagnosis; a male patient, about forty-five years old, showing a cyanosed condition of both feet extending to the ankles; above ankles about two dozen purplish elevations, pea-sized, much resembling the lesions of atrophic lichen planus; the feet were slightly swollen and painful; the latter when walking or standing much; the opinion of most of the members that the condition was typical of sarcoma pigmentosa cutis, the local asphyxia being considered characteristic.

Dr. Edw. Pisko presented a girl of six years with alopecia capitis totalis; the process began at the age of six months, the hair falling out in patches until entire scalp was involved. A bad prognosis was given. A typical case of erythema nodosum was shown by Dr. Pisko in a girl of eight years. Dr. Pisko also presented his case of xanthoma diabeticorum to show that despite treatment the urine still shows five per cent. of sugar and new lesions appearing on the face. A case of mycosis fungoides of four years' duration and a case of sarcomatosis multiplex cutis was likewise shown by Dr. Pisko. Dr. Weiss believes both cases to be multiplex fungoides, merely differing in degree. Drs. Oberndorfer, Abrahams and Gottheil are of the same opinion. Dr. Gottheil claims that in these two conditions the microscope is not a reliable guide to differential diagnosis.

Dr. J. Sobel presented a case with the following history: A child of ten months had a patch of eczema on cheeks and shoulders; thirteen days ago boarded a ship and was vaccinated; two days later numerous vesicles appeared on the body which ruptured, leaving excoriated surfaces which later crushed over; when seen two days ago the shoulders presented two large bullæ; these have since ruptured, leaving a red excoriated weeping vegetating surface; the child has also pediculi capitis, general body uncleanliness and the recent vaccination site shows infection. He called it impetigo bullosum, with secondary infection. Dr. Gottheil said the shoulders reminded him of a dermatitis vegetans. Dr. Geyser saw a case of infected urticaria which in many respects resembled this case.

Dr. Kinch regards it as a pus infection with resultant lesions. Dr. Weiss saw some resemblance to actinomycosis. Drs. Pisko and Oberndorfer mentioned pemphigus vegetans.

Dr. A. Bleiman presented the following case: A man of seventy-eight years for a period of forty years had a small pigmented mole over right molar region, which never gave him any trouble until one year ago, when it attained the size of a 3-cent piece; up to six months no change until accidentally struck by a piece of wood; it grew to the size of a quarter dollar; it is purplish in color, semi-fluctuating, and shows slight ulceration along its edges; it is absolutely painless and does not annoy patient except by its presence. No glandular involvement and otherwise patient is in general good health. Dr. Abrahams regards it as epithelioma. Dr. Gottheil said the characteristic peripheral hardness of epithelioma was absent; he called it angio-sarcoma. Dr. Pisko regards it as epithelioma; Dr. Oberndorfer as sarcoma; Dr. Sobel as malignant melanosarcoma; Dr. Weiss as angiosarcoma and advised radical measures. The danger of metastasis should not be overlooked.

The following cases were presented by Dr. W. S. Gottheil: (1) Case for diagnosis; female patient twenty-eight years old; married; hoarse since infancy; operated upon five years ago for appendicitis; a uterine tumor of some size is apparent; five weeks ago an eruption of pea-sized vesicles appeared on abdomen and upper thighs; these ruptured, leaving red plaques which spread in circumference to the size of a quarter; a similar outbreak of vesicles followed by the same process appeared six days ago; these plaques are round, red and scaly. Old lesions now show pigmentation. Dr. Gottheil called it erythema syratum. Dr. Pisko regards it as a specific lesion. Dr. Abrahams could not agree with the latter two; similar eruptions within so short a period spoke against syphilis; some lesions observed in the mouth suggested to him the probable diagnosis of pemphigus foliaceus. Dr. L. Weiss said a pemphigus would not be so limited in extent and in healing would leave deeper pigmentation and deeper scarring; in the existence of a uterine tumor there may be some connection with a condition described by Dühring as dermatitis gestationis.

(2) A case of hereditary syphilis in a girl of eighteen years; the double interstitial keratitis resulting in blindness, the deafness, scars, orifice and the fissured lips at angle of mouth, he considered characteristic.

(3) A case for diagnosis; a boy of ten years, showing circular red patches on arms, thighs, abdomen and chest, covered with yellowish green crusts; the patches gradually enlarge to size of a 25c. piece, the crusts fall off, leaving a circular pink patch, with pale centers, raised margins and slightly desquamating. The oldest lesion is on the left thigh and is 3x4 inches, and seems to have attained its dimensions by coalescence of small circular patches; this patch is three months old; patches elsewhere vary between one and three weeks' duration. Dr. Kinch called it impetigo contagiosa; Dr. Abrahams parasitic eczema; Dr. Pisko herpes tansurans circinatus; Dr. Sobel herpes tansurans or impetigo circinatus; Dr. Bleiman thought of favus infection with clinical manifestations of a herpes tonsurans. Dr. Weiss termed it circinate psoriasis with marked seborrhea.

(4) A case of dermatitis atrophicans; patient stated process began on the feet several years ago and characterized by redness, extending to the knees; the hands and forearms became subsequently involved; skin over tibia shows thinning and atrophy, while on arms there appears to be induration and thickening of skin. Dr. L. Weiss regards the case as one of scleroderma; the process on legs being the final stage, characterized by atrophy.

(5) A case of hypertrophied lingual tonsil; situated at base of tongue, it interfered with deglutition and speech. Dr. R. Abrahams presented his case of scleroderma to show result of treatment with thyroid, patient taking 15 grains per day with 1-30 strychnine; the patient was very much improved, and takes the thyroid with no bad effects. A second case presented by Dr. Abrahams was one of atrophia striatum in a male patient with a history of tuberculosis pulmonalis; the striæ were observed on both shoulders as pearly white streaks several inches long.

Dr. B. F. Ochs showed a woman of forty years with a gumma of the left leg occupying region of the calf; the gumma was ulcerating and probing through this aperture revealed a specific periostitis.

## PHILADELPHIA.

**Typhoid Still Epidemic.**—Typhoid fever still persists and the death rate is apparently increasing. Last week the new cases were 262 and the deaths 31 as compared with 247 and 27, respectively, for the preceding week. The authorities state that the only way to abate the epidemic is to boil all drinking water.

**Woman's Medical College.**—It is stated that twelve of the thirty members of the recent graduating class have been appointed hospital residents in this city, New York and Boston. This is regarded as a high compliment to the institution. The commencement address was this year delivered by former Surgeon-General Sternberg.

**Resignation of Dean Dudley.**—Dr. Pemberton Dudley after seven years of service as Dean of Hahnemann Medical College has tendered his resignation, to take effect at once. The cause of the resignation is apparently a lack of agreement between the dean and the remaining members of the faculty regarding the maintenance of order and discipline. Dr. Dudley retains his position as Professor of Hygiene and Institutes of Medicine.

**Boycott of Retail Druggist Threatened.**—Considerable commotion in the retail drug business of this city has been caused by the efforts of the Retail Drug Association to compel certain members to cease underselling the others. A "minimum price-list" has been issued and at least one firm claims that the Association has threatened to prevent wholesalers supplying them if the list is not complied with. If this be done the firm will apply to the courts.

**Bryn Mawr Hospital.**—Mr. Clement A. Griscom, President of the International Navigation Company, has donated the hospital a sum sufficient to equip a complete laboratory for bacteriological work. The laboratory which has already been begun will be situated in the basement of the recently enlarged hospital. It will be conducted by Dr. W. Bradford Eaton, who has been appointed resident physician and pathologist to the institution.

**Homeopathic Wards for Philadelphia Hospital.**—An ordinance authorizing the Director of the Department of Health to establish five wards in the Philadelphia Hospital for homeopathic treatment has been approved by City Councils' Committee on Charities and Correction as a substitute for the ordinance to convert the old Municipal Hospital, at Twenty-second street and Lehigh avenue, into a city homeopathic hospital. That the ordinance will pass is not yet known. The wards provided for include men's medical and surgical, women's medical and surgical, and a combined medical and surgical for children. A former homeopathic member of the Board of Charities states that separate buildings are preferred, but that the substitute provided will answer if they are guaranteed independent treatment and independent control of the clinic. Of the 400 homeopathic physicians in this city, ninety-five per cent. are in favor of a city hospital for homeopathic treatment.

**Smallpox Gaining in Pennsylvania.**—The prevalence of smallpox in the lumber regions of Potter and Clearfield counties was the chief consideration of the State Board of Health at its meeting in Philadelphia, May 23. An epidemic of smallpox has existed among the lumbermen of Cross Fork, Potter county, for at least six months, and 75 cases are said to exist there at present. The appropriation of $50,000 by the last legislature for the use of the Board of Health has made possible a thorough search of the region west of the Allegheny Mountains for concealed, neglected and unreported cases of smallpox. The investigation was also extended to isolated localities on the eastern slope of the Allegheny Mountains. Many cases of the disease were discovered in this way, and the search is being extended by the State authorities to the infected localities in an effort to stamp out smallpox. It was stated at the meeting of the board that because of the spread of contagious diseases throughout Pennsylvania since the Spanish-American War the routine work of the State Board of Health had increased 50 per cent. within the last year.

**Insanity Increasing.**—In his recent report to the Board of Managers of the Friends' Asylum for the Insane, Dr. Robert H. Chase, Superintendent and Physician in Charge, makes some interesting statements regarding the increase of insanity and the care of insane patients. He says: "The question, 'Is insanity on the increase?' is often asked, but it is one that does not find accurate solution, owing to insufficient data. Even when registration is found to be correctly made, the results based thereon are not apt to be fully trustworthy, in consequence of so many factors entering into the problem. From the best information at hand, we conclude it is probably true that there is still an increase in insanity. In the United States immigration has a potent bearing on the results of these computations. This may easily be seen when it is considered that while only one-eighth of the population is foreign born, one-third of the insane belong to this class. At the beginning of the fiscal year 144 patients, 58 men and 88 women, were on the rolls of the asylum, and at the close of the year, after deducting discharges and deaths 149. There were 102 patients admitted, a number not marked as exceeding or falling below that of recent years, but at the same time it is relatively large compared with some of the kindred hospitals of like size. It is well," says Dr. Chase, "that the lifestream which feeds the hospital should not be allowed to stagnate in a too sluggish flow of its incoming and outgoing channels. A changing population, more or less active, has an animating influence upon the medical staff as well as the nurses, stimulating them to fresh endeavor and checking the paralyzing tameness of a too stable household of chronic cases. After a patient has reached the full benefit of the sojourn it is of decided advantage commonly to him and hospital alike that a change be made." In reference to the moral treatment of the patients, Dr. Chase says: "At the present time no feature in the treatment of the insane is more highly valued on every hand than occupation, systematically applied and judiciously carried out. We have appreciated the applicability of the study of botany to our patients, and have introduced this season into our diversions a class in 'nature study.' The subject matter is to take a wide range, and the instruction is to be made as varied and as interesting as the teacher's skill can make it. When the season is inclement the class will be entertained indoors. Much interest has already been aroused in the patients, and it is probable that it will increase as the full scope of the plan is unfolded to them."

## CHICAGO.

**New County Hospital Wards.**—The Building Committee of the County Board decided a day or two ago to erect a contagious disease ward and a children's ward at the County Hospital, the first to accommodate 150 cases, while for children and infants there will be 130 rooms. The estimated cost of the two buildings is $125,000, and work upon them will be commenced speedily. The contagious ward will be three stories high, with elevator service. It will be built on the west side of the hospital, seventy-five feet from any other building, and having dimensions of 80 by 150 feet. It will practically be a separate institution. The whole building will have a system of ventilation which will entirely change the air in all wards and rooms every twelve minutes. The equipment of this building has been decided upon according to the suggestions of Dr. W. L. Baum, who has charge of the contagious diseases at the hospital, and of other physicians who have made a specialty of these maladies.

**Lying-In Institutions are Exempted from Drastic Regulations.**—Lying-in hospitals were placed in the category of general hospitals and excluded from the regulations recommended by the City Council Health Committee yesterday for institutions intended for sufferers from drugs and liquors, for epileptics and for victims of contagious diseases. The committee recommended for passage the ordinance requiring the consent of a majority of property owners for the establishment of such institutions, which are considered nuisances in many neighborhoods. The appearance of a large committee of distinguished physicians and of women active in women's work brought about a speedy recognition that lying-in hospitals could not be considered among those institutions requiring consent of property owners. The action of the committee, if concurred in by the City Council, will place Chicago on the same plane as all the European cities with regard to lying-in hospitals. In Europe the latter institutions are considered as general hospitals and absolute necessities. The amendment to section 48 of the building ordinance, including hospitals of this character among the so-called nuisances, came up for discussion, but it did not take long for the committee to decide that lying-in institutions should be exempted.

**Mercy Hospital Extension.**—An addition 200 feet long by 47 feet deep has been planned for Mercy Hospital. Consent of property owners will not have to be obtained in order to proceed with this work.

**Deaths from Pneumonia.**—This disease caused 172 of the total 586 deaths recorded during the week ended May 16th, from all diseases, excluding the 46 from suicide and violence. This was nearly one-third per cent. Since the first of the year there have been 2,659 deaths from pneumonia, and 1,190 from consumption, or nearly 125 per cent. more from pneumonia.

**Increased Requirements for Rush Medical College.**—Beginning with this summer, this institution will demand twelve majors, in addition to a four years' high school course; one-half of these must be in special preparatory studies for medicine, and must include chemistry and elementary biology. In June, 1904, the requirements will be further increased, and a year later the completion of the junior college course or its equivalent will be required.

**Continuous Intrauterine Irrigation in Grave Puerperal Sepsis.**—Dr. Edson B. Fowler read a paper before the Chicago Medical Society, May 20th, on this subject, in which he reported a case that was successfully treated. He said that Haynes had collected 13 cases of irrigation for puerperal fever which came more or less under his notice. He referred to two deaths, one of Chastrain's, from the passage of the irrigating fluid into the tubes, and one from rupture of a diphtheritic uterus. Langenbach and Schede each mention two cases of recovery, while Richter reports 20 cases with two deaths. The author presented a table of 129 cases, with 12 deaths, besides 52 cases of Sneugeriff, who does not state the number of deaths, and Veit, who had ten fatalities, the exact number of cases not being given. Antiseptics were used in 125 of the 129 cases, with a mortality of about 10 per cent. The other four cases were successfully treated with sterile water only. The technic employed by the different men is much the same. They use a rubber sheet, or Kelly pad, and an adjustable fountain syringe with a double or single tip fastened in the uterus or held by the hand. In the author's case there was employed a No. 8 English metal catheter in a syringe which was gradually elevated from one to three feet. He found that complete flushing of the uterine cavity was best and probably only accomplished when the tip was slowly rotated, and that this method had the additional advantage of preventing undue or prolonged pressure on one area. The quantity of liquid employed varied from one gallon an hour to ten gallons, as used in one case by Manseau. The variation in temperature was even greater, with the idea that the heat killed the germs and made the spores inert. The dangers and objections raised to the treatment are, forcing of septic fluid through the Fallopian tubes, and peritonitis; air and other emboli; hemorrhage; puncture of the uterus; rupture of the uterus; pressure necrosis and ulcers; pain; exhaustion of patient by the irrigation; shock; poisoning of patient with the antiseptic; difficulty of using the treatment outside of the hospital. The author answered these objections at length. In brief, practically all serious objections to the treatment can be overcome by the use of sterile water at a properly grade temperature and pressure for the case in hand.

## GENERAL.

**Syphilis and Wet Nurses.**—The physicians of Milan have recently been notified by the health authorities of that city to report every case of syphilis seen in a wet-nurse; the latter is then to receive treatment in a hospital or be placed under medical supervision in her own home.

**Diphtheria Spreads at Newport Station.**—Diphtheria appeared last week among the naval apprentices on the Constellation and on the monitor Amphitrite, where many boys had been sent in the hope that they would not become infected with the disease, which is epidemic at the station. Diphtheria appeared among the apprentices a fortnight ago, and as many as there were tents for were put in camps on the island. The disease, however, gained ground, and 740 boys were transferred from the barracks to the Constellation and about one hundred to the Amphitrite.

**Leprosy Among Soldiers.**—That the United States army is threatened with many cases of leprosy as a result of service in the Philippines and Cuba is the opinion officially expressed by Captain J. C. Gilmore, commanding the Fifth company of coast artillery, in Savannah, Ga., according to the *Herald.*

**Announcement.**—Messrs. Lea Brothers & Co. have pleasure in announcing that conforming to many requests they issue the superb work on the Eye, Nose, Throat and Ear, edited by Drs. Posey and Wright, in two volumes, as well as in a single volume. Volume I. will be known as Posey On the Eye, and covers completely the subject of Ophthalmology. It contains 690 pages, 358 engravings and 19 plates in colors and monochrome. Price, cloth, $4.00, net. Volume II. will be known as Wright On the Nose, Throat and Ear, and contains 570 pages, 292 engravings and 16 colored plates. Price, cloth, $3.50, net. The convenience of this plan, especially for text-book purposes, is obvious.

**Obituary.**—Dr. John B. Burdett, one of the oldest physicians of Hudson county, N. J., died on Thursday at his home, 545 Summit avenue, Jersey City, from a complication of diseases. He had been ill for nearly three years. He was born in Bergen county, N. J., on Sept. 21, 1833. He studied medicine with the late Dr. Lewis A. Sayre of New York, and was graduated from the New York College of Physicians and Surgeons in 1856. He had practised in Jersey City since 1858. He was a prominent Mason, having been a charter member of Highland Lodge, and was also a member of the Jersey City Heights Gun Club, and a Director of the Hudson City Savings Bank. He is survived by a widow and two daughters.

Dr. John A. Bitting, of Sherman, Texas, died at San Antonio, May 14, 1903. He had gone there only a few days before on account of ill health. Dr. Bitting was born at Germanton, Stokes county, N. C., October 13, 1850. In 1872 he graduated in medicine at the Jefferson Medical College, Philadelphia. Four years later, in 1878, he moved to Sherman, Tex., where he has lived continuously since. For twenty-five years he has possessed the confidence and done the practice for a large number of the most substantial citizens of the town. He has also been the medical examiner for a number of life insurance companies, among which were the New York Life, The Equitable, The Mutual Benefit, N. J., The Northwestern Mutual of Milwaukee and several others. His work in this line was done with absolute fairness, and with perfect precision. Several years ago he had taken special courses in bacteriology, pathology and microscopy, which made him a thorough and valuable examiner. In fact, one of his leading characteristics was thoroughness, both in the important matters and in the details of professional work. Being true to himself, "it followeth, as the night the day, that he was true to others."

## CORRESPONDENCE.

### POLYCYTHEMIA WITH CHRONIC CYANOSIS.

*To the Editor of the* Medical News:

Dear Sir: In connection with the editorial on Polycythemia with Chronic Cyanosis, and thanking you for the flattering suggestion to call the disease by my name, it should be clearly understood that to Saundby and Russell, of Birmingham (*Lancet*, 1902, I, 515), the credit is due of recognizing that the condition was in all probability a new clinical entity. To Vaquez, R. C. Cabot, and McKeen is due the credit of reporting the first cases.

Sincerely yours,
W. Osler.

Baltimore, Md., May 23.

### EXPERT TESTIMONY.

*To the Editor of the* Medical News:

Dear Sir: This subject seems to be the ghost that will not down.

I have seen the doctor, bright, unscrupulous, ever ready to destroy a rival by the uplifted eye and a shrug of the shoulders, and especially eager to ally himself with counsel on the side of a question that insured antagonism with the general sentiment of the profession in his community.

Perhaps I should not smile when I admit that for twenty-five years or more I have held steadfastly an opinion upon the proper way to settle the question of expert testimony; always intending to give, but modestly refraining from giving that idea to the world. It is this:

The court should have sole power in the selection of the expert, who should be selected from a knowledge of his character and standing in the profession, as a specialist or otherwise, and without question as to his views upon the matter under investigation.

No lawyer ever selects a professional witness until he has first converted him into a partisan.

S. S. Turner, M.D.

Fort Yates, North Dakota, May 12, 1903.

## TRANSACTIONS OF FOREIGN SOCIETIES.

### British.

A CASE OF ACROMEGALY AND GOITER—A CASE OF BILHARZIOSIS—TREATMENT OF TRACHOMA BY X-RAYS—MICROSCOPICAL APPEARANCE OF SECTIONS THROUGH THE ORBIT OF A CHICK IN WHICH THE LEFT EYE APPEARED TO BE CONGENITALLY ABSENT AND THE RIGHT EYE ABNORMALLY SMALL—A CASE OF LIPOMATA.

Dr. H. A. **Lediard** (Carlisle), read a paper at the Clinical Society of London, March 27, on a case of acromegaly and goiter. The patient was a woman, aged forty-three years, who was born and had always lived in Cumberland. She had had amenorrhea and headache dating from the last confinement, ten years previously. The features were characteristic, especially the lips, nose, lower jaw and tongue, as were also the speech and expression of the face. The thorax was large, the ribs being massive and the hands being broadened. Sugar had been at one time present in the urine. For some years a bilateral goiter had been evident, but in June, 1902, the patient was sent to the Cumberland Infirmary for operation on account of dyspnea with stridor and dysphagia due to pressure. The left side of the goiter was then removed and all these symptoms were relieved. The patient was exhibited to the Society, and her feeble muscular power was demonstrated. Radiographs of the hands and other parts were exhibited, together with the goiter which had been removed and microscopic slides. The usual features of acromegaly not present in this case were kyphosis, bilateral hemianopsia, sweating and cyanosis. There was no trace of the general increase in size sometimes present, but the features of the face and the limbs were so greatly enlarged that the patient could not be recognized by her relatives and the muscular power was feeble. Dr. Lediard stated that there had been no change in the pulse or temperature since the operation, but the patient has gained several pounds in weight.

Dr. **Andrew Duncan**, before the same Society, read notes of a case of bilharziosis. The patient was a man, aged thirty years, lately in the Second Battalion East Kent Regiment. He had been fighting in the Orange River and Cape colonies, and was in Lord Roberts' march to Pretoria. In May, 1902, he began to experience itching at the end of the penis and a frequent desire to urinate with great straining, but had at this time no hematuria. He also had a lump in the left groin and great pain in the lower part of the back. After rest the lump went away. He returned to England in June, 1902, and on arrival first noticed a small clot of blood in his urine. Previously to the appearance of this he had severe pain and burning in the urethra. In July, there being a decided increase in the hematuria, he went into a country hospital and was there sounded for stone and examined by the Roentgen rays. During this time also growths appeared around the anus for which mercury was prescribed on the supposition that they were specific. In January, 1903, the case was seen and at once recognized as one of bilharziosis by Mr. James Cantlie, who sent him to the Branch Seamen's Hospital, where he was admitted under the care of Dr. Duncan. On admission the patient was anemic and the urine contained blood, mucus, a small amount of albumin and numerous ova of bilharzia. In the perineum there was a slight swelling over the râphe, which disappeared after being fomented. There were three growths around the anus; one was conical and about half an inch in diameter, and the other two were flattened with broad bases of half an inch. These on removal were seen to be papillomatous swellings stuffed with the ova of the bilharzia. The feces passed by the patient were found to contain ova. There were no evidences of any growths in the rectum as far as the finger could reach. With regard to the ova passed by the rectum according to Lancarol's teaching, the spines of these when occurring in the intestinal vein were always lateral, in contradistinction to the terminal spines of the ova in the vesical veins. In the treatment of this disease great difficulty had always been experienced, but Lieut. Lelean called attention to the benefit exercised by methylene blue given in 4-grain doses three times daily. He had found that ova died in less than fifteen minutes when the stain was run under the cover glass. Dr. Duncan's patient had been treated according to Lieut. Lelean's directions, but up to the present time there had been no appreciable difference in the amount of the hematuria; the deposit in the urine glass seemed less, but the color of the urine was the same. For the first few days after his admission, and before the methylene blue was administered the patient had been given tabloids of suprarenal extract, but without any effect. Dr. Duncan now proposed to try liquid extract of male fern, as suggested by Mr. H. M. N. Milton of Cairo.

Mr. M. S. **Mayou** (Cricklade) read a paper on the Treatment of Trachoma by the X-rays. The idea first occurred to him when treating rodent ulcer and lupus of the eyelid, on finding that no serious damage was done to the globe. The first case cured in this way was shown by him last June; since then several others had been successfully treated. The histological changes in living tissues exposed to the X-rays were then described, the most important change being a superficial irritation, capable of being increased and stimulated by the simultaneous application of other irritants, such as copper sulphate. Most of the resulting leucocytosis was found around the trachoma nodules and the cells of rodent ulcer after X-ray treatment of these diseases, the reason for this being that they similarly acted as irritants. Cases of prolonged exposure of the globe to the X-rays were then instanced, where the only bad effects produced, and those only temporarily, were falling out of the eyelashes and conjunctivitis; this latter trouble was also found among workers in the X-rays, and in them it could be prevented by the use of lead glass spectacles. Mr. Mayou found, with Fuchs and Kreidl (1896), that there was no bleaching of the visual purple by the X-rays: his experiments were carried out on rabbits and frogs. The results of treatment by the X-rays were then compared with those produced by copper sulphate, jequirity and other irritants, and it was pointed out that there were less destruction of tissue and subsequent cicatrization, as well as less pain, with the former method. The eyelids were everted (the operator's hands being protected by bismuth ointment and cotton gloves); the cornea was only exposed in severe cases where pannus was present. Owing to the infiltration set up, difficulty was found in deciding when treatment should cease. Out of nine cases five remained well, one cleared up but recurred two months later, two others improved and were still under treatment, and in one case of corneal opacities following trachoma the vision had improved from perception of light to counting fingers at three feet. The advantages of this treatment were: (1) there was less resultant deformity of the lid; (2) it was painless; (3) pannus cleared more thoroughly. The disadvantages were (1) all patients did not react well to the X-rays, and (2) it was sometimes difficult to tell when treatment should cease.

E. T. **Collins** and J. H. **Parsons** communicated a paper at the same meeting describing the microscopical appearance of sections through the orbit of a chick in which the right eye appeared to be congenitally absent and the left eye was abnormally small. In the right orbit a ring of hyaline cartilage like that of the sclerotic was found, inclosing partly pigmented tissue similar to that of the chloroid. There was no lens, retina, pigment epithelium or optic nerve; there was thus a complete failure in development of all structures derived from neural epiblast. The essential element of an eye was a nervous mechanism which served to receive visual sensations for transmission to the brain. When this mechanism was completely absent the condition might be accurately described as one of anophthalmos, notwithstanding the presence of some of the subsidiary structures developed from mesoblast. As far as Mr. Collins and Mr. Parsons had been able to ascertain, there was no case of congenital absence of the eye in which it had been satisfactorily shown by microscopical examination that the mesoblastic structures were entirely absent. On the left side the chick had a microphthalmic eye in which the lens had failed to become separated from the cornea. The capsule of the lens was adherent to the substantia propria of the cornea, Descemet's membrane having failed to develop. The adhesion had obstructed the growth of the iris forwards; above it had turned back and crept around the posterior surface of the lens; below its growth had become arrested.

F. J. SMITH, at the Hunterian Society, March 18, showed a case of multiple lipomata. The patient was a man, aged sixty years, who first came under notice in September, 1901, for pain in the region of the heart, which had been present on and off for a year. He had lost 28 pounds in weight, and complained that solid food produced great pain. The abdomen was rigid and the liver was slightly enlarged and tender. The case was diagnosed as one of probable malignant disease of the stomach, but the patient improved very rapidly under treatment by bismuth and opium. He was again seen in February, 1902, still complaining of some pain in the lower chest on the left side, and there was then found to exist an obscure nodular swelling just below the ribs. Diagnosis was still obscure and the case was watched with some interest. By May extensive subcutaneous growths had appeared above the clavicles and on the ribs and arms with signs of obstruction of the deep veins—enlargement of the subcutaneous veins of the chest—but he again improved very much under bismuth and opium and the arms diminished in circumference by four inches. The only other point of interest obtained was that he suffered from free epistaxis in association with the strain of vomiting. On admission to hospital in March, 1903, his state was as follows. He was apparently a fairly well-nourished man; superficial examination showed that above the clavicles and on both upper arms there was a diffuse and profuse growth of what felt like subcutaneous fat; on both forearms there were lumps varying in size from that of a walnut to that of a golf-ball with an elastic, semi-fluctuating feel, freely movable on the muscles, but incorporated with the corium; in fact, with all the physical signs usually associated with multiple and diffuse lipomata. The thighs presented a similar but much less marked condition than the upper arms. On the tendons of the wrist and on the tendon of the rectus femoris on each side there were one or two small lumps firmly adherent to the tendon sheaths. On the left first rib at its junction with the sternum and over the right pectoralis major were one or two lumps of a much finer consistency, feeling suspiciously like glands infiltrated with some form of growth. The veins on the left side of the chest in front were rather more prominent than was usually the case, though not sufficiently so to suggest serious blockage of large, deep veins. Examination of organs gave no indications of disease, the air entered both lungs freely to the base without adventitious sounds or alteration of the natural ones; the heart beat was regular in rhythm and the sounds were satisfactory; and in the abdomen there was nothing to be felt that could be called abnormal, unless it was a little tenderness to palpation in the upper abdomen generally. Dr. Smith gave the above details, or rather, called the attention of the Fellows to the above points, and then considered the diagnosis. He stated that in his opinion there could be no doubt that the majority of the lumps were lipomata, but he was in doubt whether there was not also some glandular involvements; he hoped to be able to persuade the patient to allow one of the quasiglandular lumps to be removed for microscopical examination. He promised a further communication on any new facts in the case.

## SOCIETY PROCEEDINGS.

### THE AMERICAN MEDICAL ASSOCIATION.

*Fifty-fourth Annual Meeting, held at New Orleans, May 5 to 8, 1903.*

(Continued from Page 998.)

### SECTION ON THE PRACTICE OF MEDICINE.

THIRD DAY—*Continued.*

**Typhoid Fever not Special to Cities.**—Dr. Fulton showed that typhoid fever was not special to cities, but according to the last census formed an important factor in the death rate also of small towns and rural populations. The typhoid curve of mortality is in inverse ratio according to the twelfth census to the density of population. In places where the population is below 100 to the square mile the typhoid mortality was 67 per 100,000. There is need of careful prophylaxis in the country as well as the city. The first important factor for this is the recognition of the disease. The next is the exercise of faithful precautions with regard to feces and urine, especially this last. These precautions must not be abandoned when convalescence has set in, as is so often the case, but must be kept up for many weeks and even months, at times after the patient is up and about. The use of urotropin will make the urine non-dangerous when it would otherwise be infective.

Dr. John H. Musser, of Philadelphia, in discussing typhoid fever, said that the Widal test does much to clear up doubtful diagnoses and consequently to make the spread of the disease from unsuspected foci less likely. The bacteriological diagnosis is also important in this respect since it may be made before the Widal test is positive. The diagnosis of typhoid fever is often missed. In a recent case in a physician's own family Dr. Musser found two unsuspected cases. Three others of the family came down with the disease as a result of the lack of precautions during the non-suspect period. The disinfection of urine is now the most important element of prophylaxis and for this the use of urotropin, which not only does no harm but prevents cystitis so common in typhoid, or cures it if it has already begun.

**Milk and Typhoid.**—Dr. DeLancey Rochester, of Buffalo, said that after water milk is the most frequent source of typhoid. Not long since an epidemic of the disease in Buffalo was traced to the selling middleman who handled the milk during the time when typhoid fever was in his family.

Dr. Kraus, of Memphis, reported a case in which the typhoid infection had come from ice cream contaminated in the handling. When Dr. Kraus was in the office of the health bureau at Memphis, some years ago, the records showed 270 deaths from tuberculosis, 230 from malaria and 40 from typhoid fever. Undoubtedly in many of these reported deaths from malaraia the real cause was typhoid fever.

**Sanitary Experts versus Engineers.**—Dr. Frank Warner, of Indianapolis, said that until our American cities took more care with their water supplies the typhoid mortality in this country will be high. Cleveland is now in the midst of an epidemic of the disease, Twelve hundred cases have been reported and the health authorities suspect that at least 3,000 cases have occurred. The new intake for city water from the lake is some two miles above the town and is promised to be pure but only engineers and not bacteriologists or medical sanitarians have been consulted with regard to it. This is the mistake that has been and is being constantly made in many parts of the country. The engineer is capable of solving the problems of water transportation but not of providing a healthy supply or of realizing the conditions on which that will depend. This short-sighted policy that has made the mistake of the Chicago drainage canal possible must be corrected if good water supplies are to be furnished.

**Intermediate Type of Fever.**—Dr. Roberts, of Nashville, Tenn., said that there is undoubtedly a third continued fever, besides typhoid and malaria. In a number of recent cases while no plasmodium could be found no Widal test was present.

Dr. C. L. Abott said that besides drinking water there were other causes of typhoid fever that must be guarded against. Flies and mosquitoes are prominent in this respect, yet very few precautions are taken.

Dr. Jas. Tyson, of Philadelphia, said that the more experience the clinician had the less liable was he to think of another type of continued fever besides malaria and typhoid fever. The danger of typhoid fever being contracted from water can practically all be obviated by boiling the water. This simple precaution is not sufficiently insisted on with the result that many needless cases of typhoid develop and consequent danger for others.

**Civic Responsibility and Neglect.**—Dr. Jas. J. Walsh, of New York, said that the recent expression of a sanitarian when a death from typhoid fever takes place some one should be hung should be kept before the minds of municipal authorities. It is now known how to prevent typhoid fever. When, therefore, it occurs some one is criminally responsible. It is no mere unfortunate accident about which nothing further is to be said. Polititians who prevent the furnishing of pure water must be taught that the civic sense of the community will not permit such playing with human life. Methods of filtration that are effective are now well known and there is no good excuse for typhoid fever from impure municipal water.

Dr. Walter Shropshire, of Yoakum, Tex., said that the boiling of water only gives a false sense of security. Typhoid fever may be conveyed by flies, by uncooked vegetables, by personal contact. Real prophylaxis must begin further back by a provision of good water, for the ignorant, careless classes cannot be educated up to regular habits in the boiling of water, and thus become sources of contagion for others.

Dr. T. J. Happel, of Trenton, Tenn., in closing the discussion, said that he was convinced that there was an immediate type of fever between typhoid and malaria. This is a simple continued fever not due to the bacillus of Eberth, nor the plasmodium. It is begging the question to say that these cases are paratyphoid fever, for that concedes they are not typhoid.

Dr. John S. Fulton, of Baltimore, said that the trained nurse is a better barrier to the spread of typhoid than the physician because her constant presence enables her to see that proper precautions are observed. For the disinfection of typhoid stools the best thing is chloride of lime or fresh unslaked lime. This is unpleasant but may be kept out of the house in a basket and is cheap, yet if used plentifully, gives satisfactory results.

The Chairman, Dr. Thayer, said that when the United States Commission from the Marine Hospital Service were investigating the question of the transmission of yellow fever, the whole commission offered themselves for experiment in this matter. During the course of their investigation, Dr. Lazear took the disease and Dr. Carroll, who had been inoculated, also acquired the disease. Lazear unfortunately died from the disease. Dr. Carroll, however, is able to present the results of the investigation and stands as one of the men most deeply concerned in one of the most humanitarian discoveries of all times.

**Transmission of Yellow Fever.**—Dr. James Carroll, U. S. A., said that in the summer of 1897 some investigations were carried on with the idea of determining the cause and method of transmitting yellow fever. Sanarelli's bacillus was at that time the accepted cause of the disease. In eleven autopsies made with great care and especially with every bacteriological precaution, the army commission failed to find Sanarelli's *Bacillus icteroides*. There were two lines of investigation then open. The first was to accept the mosquito transmission theory which had been insisted on for many years by Finlay and to continue the study of the bacteriology of the intestinal tract. Needless to say, after all the investigations that have been made of intestinal bacteria in tropical countries with the idea of finding the yellow fever bacillus, this did not seem a very favorable method.

**Traditions of Mosquito Theories.**—The connection of the mosquito with yellow fever was urged by some of the old physicians. Rush, in 1797, suggested it and in the two decades between 1840 and 1860 a number of medical men advanced it once more. In 1853 Bärenhaut, of Biloxi, Miss., said that during the yellow fever epidemic of that year, mosquitoes and fleas were very abundant. In 1839, Sir William Ferguson stated that yellow fever was conveyed from place to place in South Africa and that there were always three to four weeks between the landing of yellow fever patients and breaking out of the epidemic in the land. Carter also noted this period of extrinsic incubation.

**Finlay's Work.**—In 1881 Dr. Finlay, of Havana, advanced the theory that the yellow fever was transmitted by mosquitoes and reported five mild cases of the disease which had been thus communicated. His report was made to the Royal Academy of Madrid. His idea was that the mosquito took some of the infectious material from a patient suffering with yellow fever and then transferred it mechanically to the next person bitten. He thought that the hibernation of yellow fever might be accomplished in the sheath of the proboscis of the mosquito. This is quite different to the theory of the Army Commission, which assumed the existence of the parasite of yellow fever in two stages, one in the vertebrate and the other in an invertebrate host. Hence the necessity for the extrinsic incubation period noticed by Sir William Ferguson. The shortest interval noticed between the bite of a mosquito and the communication of yellow fever is twelve days. The longest thus far noted is 57 days. Dr. Finlay assumed that his cases of yellow fever developed three days after the mosquito bite. The attack was usually very mild though sometimes a degree of protection was acquired by the persons bitten without the actual occurrence of yellow fever. The Army Commission did not find this protective influence.

**Study of Incubation Period.**—The ordinary intrinsic incubation period of yellow fever is from one to seven days. At the time of Finlay's experiment ninety deaths from yellow fever took place in Havana. The experiments were made upon recently imported, non-immune young Spanish soldiers who had just come to Havana. It is easy to see that these experiments have little value. Dr. Finlay caught a specimen of the mosquito known as *Pungens*, just after it had bitten a yellow fever patient and pressed some of the material including blood just sucked up into a test tube. A *Stegomyia* mosquito was then applied to the material and after feeding was induced to bite a non-immune individual who came down in two days with yellow fever. This is one of his characteristic experiments and one on which he depended for the proof of his theory. From what is now known it is of no value. The experiments performed by the Army Commission were quite different. Lazear submitted to being bitten by infected mosquitoes, but without result. Later, when on attending some yellow fever patients, he saw a mosquito bite him, he allowed it to escape. His sad end is very well known. Unfortunately an American nurse, on whom the experiment was tried, also died. These cases demonstrate, however, beyond a doubt that it is the mosquito that transferred yellow fever, and further experiments have shown that it is only the mosquito that does so. Before the mosquito theory fomites played an important rôle. Now, apart from fumigation, which kills mosquitoes, disinfection is considered to be absolutely useless.

**Prophylaxis of Yellow Fever.**—Dr. Stanford E. Chaille, of New Orleans, said that he had been a student of yellow fever since 1851. He had shared the dangers and the blight of city life and commerce that the disease caused and he appreciated the efforts of those who had recently done so much. The certainty of the method of transmission of yellow fever is one of the greatest blessings that has ever come to mankind. Yellow fever has been in Havana for 140 years, but since the investigation of the United States Army Commission and the methods put in practice by them no cases have occurred since September, 1901. Formerly filth and fomites were considered the important agents in the transmission of the disease. Now these can be disregarded and if we only prevent mosquitoes from getting at yellow fever patients, there will be a total disappearance of the disease. Parnell and Souchon, among Southern sanitary authorities, still insist on the importance of disinfecting the fomites.

**Mosquito Warfare.**—It is important that the crusade against mosquitoes should be undertaken seriously by all cities likely to be affected by yellow fever. Havana's successful warfare makes evident that this is the important prophylactic precaution and yet shows at the same time how possible it is to secure absolute protection from the disease. It might easily be thought that the precautions were not difficult, but Guiteras' observation that the *Stegomyia* may live for 150 days after having been infected by application to a yellow fever patient shows the necessity for extreme care. With regard to fomites, the experience in New Orleans that often persons in the same house with yellow fever patients did not acquire the disease is confirmatory of the non-infectiousness of this material. Undoubtedly, however, yellow fever may gain an entrance into the city among the unvisited poor and may spread before proper reports of its existence are made. The blood of yellow fever patients is, however, only infective during the first four days, so that precautions are not so difficult as they might appear. It may yet be found that there are other hosts and it is not impossible that drinking water may become infected from dying mosquitoes, but these are possibilities not yet fully investigated.

**Knowledge Not Yet Definitely Fixed.**—Dr. Souchon, of the State Board of Health of Louisiana, said that disregard of disinfection may yet prove serious and lead to the outbreak of a severe epidemic of yellow fever. The investigations of Reed and Carroll, of the United States Army Commission, was carried on at Havana at a time when yellow fever was not especially virulent are likely to become more epidemic. The city of Havana had been thoroughly cleansed as never before and sanitary precautions of the greatest stringency were being taken. The mosquito theory as the only method of transmission of yellow fever cannot be accepted absolutely. One-third of the non-immunes who were inoculated by the mosquitoes did not acquire the disease. Fomites transmitted to New York and to Spain may not transmit the disease, but that is because these are unfavorable climates. It is quite another thing to assert that the disease would not be acquired at New Orleans, Galveston or Mobile. The yellow fever germ has not been seen yet, it is not known if it is an animal or a plant parasite; it may be conveyed in many ways. It is important to wait then and be sure before giving up old-time precautions, that have proved successful for new ones as yet only on trial.

In closing the discussion, Dr. Carroll said that the fact that the injection of the blood of yellow fever patients gave yellow fever is no argument against the mosquito theory, since malaria may also be conveyed the same way, yet is surely mosquito-borne. There is no question in the minds of any of the commission who saw the experiments in Havana and who followed every step of the eradication of yellow fever from that city, but that fomites have nothing to do with the case and the mosquito is the only active agent for communicating the disease.

**Source of Infection of Plague.**—Dr. W. J. Calvert, of St. Louis, said that plague has now been in existence as an epidemic for nearly eight years and there is no doubt that it will continue for some time to be a constant threat for civilization and commerce. It was transferred from Hongkong to the coast towns of China and there seems no doubt that rats were the agents of the transfer. The port of Hongkong is infested with rats to such a degree that they are a positive nuisance. Since then it has followed the track of commerce and each of its appearances has not been difficult to trace to its origin. The recognition of the disease in its earlier stages is extremely important, in order to avoid its spread before precautions are taken. There is usually only a slight reaction at the point of entrance, and this may occur in so small a wound as not to be noticed. Lymphangitis and some swelling of glands commonly follows. The primary bubo among the unshod eastern people are more than 50 per cent. of them in the femoral and inguinal regions, 25 per cent. are axillary, because of the liability of the hand to small wounds. In children the glands in the cervical region enlarge very often because of the habit of putting things into their mouths.

**Other Points of Entrance.**—While most of the infections occur through wounds and through the mucous membrane of the mouth, other points of entry are well known. Pneumonia is frequent so that the bacilli somehow get into the air and are breathed into the lungs whence they affect the bronchial glands and produce a severe form of the disease. Mesenteric bubos from infections through the intestinal tract are rare, but occur occasionally. Hemorrhage occasionally takes place into the stomach and the vomited material constitutes a source of danger, though the fact that few attendants in hospitals have been affected, shows that the disease is not contagious. Any material in contact with the patient may prove infectious and its infectiveness may last much longer than was formerly supposed. The disease spreads especially in the dark, poorly ventilated houses of the poor.

**Origin of Plague.**—Plague originated in Egypt and was carried far by merchants. The bacillus is very long-lived and may be transmitted in merchandise even months after contact with the patient. Rats are probably the most fruitful source of the disease. The affection is raging very virulently in the East and unless concerted action for its regulation is taken repeated epidemics may be anticipated along the track of world's commerce for years to come. The problem is an important one and must be frankly faced, or great loss of life, to say nothing of disturbance of commerce, may result.

**Prophylaxis of Plague.**—The most important thing is diagnosis. This is not always easy. The first cases are seldom actively bubonic. Such cases are easily diagnosed. The first cases, too, are seen not in hospitals, where every facility of diagnosis is at hand, but in hotels in which physicians and every one concerned are resourceful in attesting the non-infectiousness of the fatal fever. In San Francisco one case of plague was treated as typhoid fever. Another case diagnosed diphtheria was treated with an abundance of serum. This patient became violent and spit in the face of the nurse who developed an acute plague septicemia. Plague pneumonia was considered lobar pneumonia, but the child of the woman suffered with true bubonic plague. Not infrequently, when there are local symptoms, the infection is considered to be erysipelas. One case diagnosed as acute appendicitis requiring immediate operation, was found to be infection of the retroperitoneal gland and the appendix was perfectly healthy. Bacteriological examinations made aboard vessels supposed to have beriberi showed that though macroscopically the disease seemed to be beriberi the pest bacillus was present.

**Failure of Chinese Exclusion.**—It is clear now that Chinese exclusion does not exclude. Some arrangements are made for interchange by law and Chinese enter through irregular channels. It is impossible that cases should always be diagnosed by visiting physicians and since our intercourse with China makes the danger of the entrance of plague constant suspicious cases should always be removed to hospitals where they can be examined thoroughly and at leisure. Whenever a case occurs, the premises should be disinfected, unless it is proved that the disease was contracted elsewhere. Gaseous disinfection and the abundant use of chemicals are more or less effective, but fire should be freely employed for all suspected infected articles. All rats and mice found dead should be examined bacteriologically in order to determine the cause of their death.

**Possibility of Prevention.**—The disease is carried by maritime commerce. At Hongkong, since the placing of sanitary officers and the proper inspection and disinfection of sailor's quarters, no cases of plague have been reported on American vessels. Canada requires only inspection and at least one case has been discovered on Canadian vessels. This shows the danger that exists. As a rule deaths occur among the rats of a port three to four months before the disease is discovered on land. This was true at Hongkong and, fortunately, vessels load out in the stream and so are somewhat preserved by infection by rats. Rats flourish at San Francisco as is well known and have undoubtedly been a mode of spreading infection. Plague among human beings may be stamped out rather easily if the authorities recognize the disease and take the precautions that modern sanitation suggests. Flies and rats, etc., may become infected, however, and thus keep the disease alive for a long time. Killers of rats in eastern ports die in large numbers, as is well known, from plague. At Alexandria the last rat found dead from plague was eighteen months after the last human case had been discovered.

**Disingenuousness of Authorities.**—It is always true that plague is possible everywhere to the minds of port authorities, except just where it occurs. At Bombay, even after many hundreds of deaths had occurred, it was considered impossible. This was true at Oporto, Alexandria and San Francisco. Glasgow and Sydney gave an opposite example. They admitted at once, warned the world and took measures to stamp out the disease and keep it from being carried from their cities to other places. If the same energy were manifested for the suppression of the plague as for its concealment and for the hampering of sanitary authorities it would long ago have been less dangerous for the commercial nations. This was true, to our sorrow be it said, in this country also, until the spread of the disease from one of our cities to other ports showed the impossibility of denial.

**Animal Not Human Disease.**—The discussion on plague was opened by Dr. F. G. Novy, of Ann Arbor, Mich., who said that plague is an animal and not a human disease, affecting rats by preference but easily conveyed to human beings. Its bacillus was discovered by Yersin not Kitasato. The flea is responsible for its spread and it is possible that other insects also enjoy this bad distinction. The organism, though it has caused so often in the world's history such widespread epidemics, is a mere weakling. It is very easily destroyed. There are two vaccines against the disease, Yersin's and the Haffkine serum. Haffkine's is prepared by heating the cultures of the organism until they are destroyed, when the injection of the material produces a certain immunity to the disease that does not, however, last very long.

**Curative Serum.**—Yersin's serum is curative as well as immunizing. It is prepared by injecting bacilli of the most virulent type of the living germ into the horse. This gives a form of antitoxin that is very strongly protective. This has been proved also to be valuable as a curative agent. Dr. Novy had one experience with the use of this serum as a therapeutic agent. A student working in the laboratory at Ann Arbor acquired plague of the pneumonic type. The serum did excellent work in this case though it had to be employed very freely and it is evident that if Yersin's serum is to be curative it must be employed in large quantities.

**Situation in San Francisco.**—Dr. Rixford, of San Francisco, said that it must be acknowledged that plague existed at San Francisco and San Franciscans are not proud of the position taken by the sanitary authorities, the mass of the medical profession in the State Medical Society admitted its presence. The sanitary authorities were trusted in the matter, however, and the medical profession was deceived.

**Arthritis Deformans.**—Dr. Thomas McCrae, of Baltimore, said that the present knowledge of rheumatic and rheumatoid conditions was in a chaotic state. There are two types of rheumatic arthritis with bony changes: The first is an osteo-arthritis, the second is a polyarticular affection, the bones being affected secondarily. There are three clinical types of the disease that are often seen: These are (1) Heberden's nodes affecting the terminal joints of the fingers and spreading thence to other joints; (2) polyarticular low grade inflammations with proliferative changes in the bones and (3) mono-arthritic conditions which are doubtful. A form that does not exactly come under any of these and yet is much commoner than was formerly thought is spondylitis deformans, that is arthritis deformans affecting the vertebral joints.

**Arthritis Deformans at Johns Hopkins.**—In the last thirteen years there have been 110 cases of arthritis deformans under observation at Johns Hopkins. Of these 55 have been males and 55 females, an exact division that occurs in no other set of statistics. There were 106 whites and four colored patients. This is 26 to one, while the ordinary proportion of whites to blacks, is seven to one in the hospital. This is very different to acute rheumatism in which the proportion is only four to one showing that the blacks have a special tendency to suffer from acute rheumatism. It is often said that the sufferers from arthritis deformans are foreign born, 96 of these cases were natives.

**Heberden's Nodes.**—Cases having Heberden's nodes were not counted among this series of our arthritis deformans unless there were other symptoms. In nine cases that began with Heberden's nodes other joints have become involved, though only two of the cases were severe. This confirms some of Charcot's idea that Heberden's nodes protected from the severer forms of arthritis deformans. In no case was there any spondylitis in cases beginning with Heberden's nodes. There were two cases of Still's disease. There were 90 cases of polyarthritis. One-third of these patients were below twenty years of age. In nearly one-half of the cases there was an acute onset and there were acute recurring attacks from one to ten in number. Intercurrent affections were prone to bring back the attacks. In ten the cause of the recurrence seemed to be injury, in six severe wetting, in five dysentery.

**Distinctive Spread of the Disease.**—In many cases of true arthritis deformans the joints of the cervical vertebræ become involved. This is true of at least one-third of the cases. In one-fourth of the cases the temporomaxillary joint becomes affected. In 80 cases the knees were involved showing that the disease is prone to attack this joint. The temperature as a rule was low —99° to 100° F. The pulse was higher than would be demanded by the ordinary pulse temperature ratio; in less than ten per cent. of the cases was there a normal pulse. The affection may be differentiated from acute rheumatism then by the lower temperature and a tendency to the involvement of the joints of the neck and the jaw.

**Pathology of Arthritis Deformans.**—The description of the pathological changes given in the text-books show only the late changes and are therefore not of much value for the practitioners seeing early cases. The disease seldom kills and early stages of the disease do not come to autopsy. In a few cases examined inflammatory changes were the characteristic incidents of the arthritic trouble.

**Simulate Acute Rheumatism.**—The diagnosis of acute arthritis deformans usually made is nearly always acute rheumatism. This means at once the administration of large doses of salicylates over long periods; as a consequence, too, meat is cut off and the patients are put on a low diet. No worse régime could be instituted for such cases. The salicylates are depressing and disturb the composition of the blood. Nutrition is the most important and patients must be encouraged to eat plentifully and meat must be a staple article in their diet. The affection seldom leaves without some trace, and it takes weeks before the joint clears up, while rheumatism leaves a normal joint. The heart practically escapes in arthritis deformans before the diagnosis acute rheumatism is made, then it is the physician's duty to exclude arthritis deformans.

**Spondylitis Deformans.**—Spondylitis deformans, supposed to be rare, is really not at all infrequent. There were 22 cases under observation, 20 of them being males. Localized spondylitis is often overlooked. The characteristic sign of it is the deposit of bone in the vetebræ which gives a distinctly rough feeling. Often there is complaint of pain and stiffness in the back and the affection is sometimes called lumbago. Owing to the stiff position which the patient must maintain, pains and tired feelings in the legs are apt to develop and the affection is often called sciatica. In all suspicious cases the spine should be examined. The patient should be stripped and bend forward and backward and then to either side while the hips are held firmly. Distinct limitation of motion will be noticed. In young people there is danger of mistaken diagnosis, for tuberculous caries of the spine. In all the cases at Johns Hopkins the tuberculin test was employed and was negative.

**No Uric Acid Diathesis.**—Dr. James J. Walsh, of New York, said that undoubtedly most of the cases of supposed subacute or frequently recurring acute rheumatism leaving changes in the joints and running over into chronic rheumatism, were really cases of arthritis deformans. This affection is much more common than has been thought, and in young women particularly, rheumatic attacks which are not affected by the salicylates or which cause any involvement of the jaw or neck-joints should be suspected of not being acute articular rheumatism, but of being arthritis deformans. So far it has been the custom to attribute many joint changes to a supposed uric acid diathesis. There is absolutely no ground for so thinking. The word rheumatism has been abused to an enormous extent and so long as practitioners are satisfied with this for diagnosis, rational therapeutics of these cases is impossible.

**Arthritis Deformans in the Dissecting Room.**—Dr. Moore, of Galveston, Texas, said that a large number of cases of chronic changes in joints occur in the dissecting room. It is evident that most of these cases are not due to chronic rheumatism, though they are often so diagnosed, but rather to arthritis deformans. Dr. Moore has had these cases in which pains in the back and legs were due to changes in the vertebræ.

Dr. C. E. Skinner, of New Haven, said that there are a number of important affections masquerading under the name rheumatism. Certainly many nervous affections and many forms of neuritis are grouped under this accommodating name. It is often impossible to differentiate them at the beginning and later changes in joints from atrophy or disuse may complicate the problem.

In closing the discussion, Dr. McCrea said that early diagnosis of cases of arthritis deformans furnished the possibility of preventing the recurrence of the disease and the later serious changes in joints, if patients can only be kept from exposure and their general health preserved. Nutrition is the most important thing in treatment. There must be no cutting off of meats, and while massage and baths are of doubtful utility as soon as the acute symptoms subside in rheumatic arthritis, the patient must be got out of bed and made to move around. Movement will do more good than anything else to prevent changes in joints.

## Fourth Day—May 8th.

**Passing of Chronic Rheumatism.**—Dr. James J. Walsh, of New York, said that rheumatism is one of the therapeutic opprobria of present day medicine. It is the great field of success for the quack. One of the reasons for failure in treatment is undoubtedly carelessness in diagnosis. In many so-called rheumatic conditions are really pathological conditions quite different from rheumatism. Dr. Walsh enumerated flatfoot and weak foot, old dislocations of joints, relaxations around joints and various unfavorable conditions for muscular action, as causing so-called rheumatic pains because they are often worse on rainy days. For instance in scoliosis the side of the body on which the scapula is most prominent is almost sure to be more painful and fatigued if there is much exertion. Practically all of the occupations in which there is some habitual motion cause painful conditions that may easily be called rheumatic and treated as such, but of course without success.

**Rheumatoid Arthritis.**—There are three forms of rheumatoid arthritis, the polyarthritis, the mono-arthritis deformans, the best example of which is senile coxitis, or the analogous affection spondylitis deformans and, finally, Heberden's nodes, with the slow running form of polyarthritis deformans. These affections are much more common than has been thought and are often mistaken for obstinate or anomalous cases of acute or subacute rheumatic arthritis or for chronic rheumatism. In young women especially chronic arthritis, rheumatoid arthritis may give a picture that resembles very closely, especially at the beginning, acute rheumatic arthritis. The salicylates fail to relieve, however, and the disease is not self-limited, as rheumatism is, nor do the lesions in the joints clear up in the satisfactory way characteristic or true acute rheumatism.

**Frequency of Gout.**—Gout is supposed to be infrequent in this country, but as matter of fact Osler's statistics from Johns Hopkins show that three cases of gout come under treatment in Baltimore for every four cases admitted to St. Bartholomew's Hospital in London. Most physicians would have said at once that gout was at least three or four times as frequent in England as in this country, while as a matter of fact it is only one-fourth more frequent.. After the cases of relaxed joints occupation neuroses, neuritis causing disability, pain, achy feelings, and as the result of trophic influences, changes within the joints, and if the cases of gout and rheumatism are taken out of the list of chronic rheumatism very little will be found to be left for this supposedly very frequent disease. As a matter of fact chronic rheumatism is a medical curiosity.

**Uric Acid Diathesis Overdone.**—Dr. James Tyson, of Philadelphia, said that there is undoubtedly more gout in this country than has been thought and gout and chronic rheumatism require very careful differentiation. Too many aches and pains are attributed to the uric acid diathesis and it is doubtful as yet just what the condition is or what is its significance. The presence of the increase of uric acid in the urine occurs ocasionally as the result of overeating and drinking, but is very rarely a permanent condition and entirely too much has been attributed to it.

Dr. McCrae, of Baltimore, said that most obscure painful conditions are called chronic rheumatism. The profession is largely to blame in this matter, though medical men have inherited the idea and now pass it on. With regard to arthritis deformans and chronic rheumatism and the relation of these diseases to gout, medical opinions even in England, where these diseases have been most studied, are absolutely chaotic. One hundred and ten years ago Heberden's nodes were described and if the old English physician in whose person they were first recognized still has an interest in medicine he must be extremely interested to find how little more is known than in his own day.

**Helter Skelter Diagnosis of Rheumatism.**—Dr. Alexander Lambert, of New York, said that at present there is entirely too much helter skelter diagnosis of rheumatism and the profession must get a more respectable and more self respecting attitude towards these painful affections. For a long time Dr. Lambert has been of the opinion that so-called cases of chronic rheumatism in which ulnar deformity occurs, are not due to rheumatism. Acute rheumatism is undoubtedly sometimes diagnosed, especially in young women when the cases are really arthritis deformans. Gout has increased greatly in New York. There are cases of chronic rheumatism, however, developing as the result of long-continued subacute rheumatism, or a series of attacks of subacute rheumatism. As for the uric acid diathesis more uric acid will be found in the urine of a strong, healthy young man doing athletic work than in any other class of persons. These persons will surely not be pronounced gouty, or still less rheumatic.

Dr. Walsh, in closing the discussion, said that his title the passing of chronic rheumatism does not imply that there are no cases of the disease but that it is losing its marked prominence as a widespread frequent affection. It is a rare and not a frequent disease. If medical men generally could be gotten to realize that chronic rheumatism is a medical curiosity careful studies of which would be accepted readily for publication and would make very welcome contributions to medical literature then the quacks and especially the osteopaths would have fewer opportunities to make cures after the regular practitioner has failed because of mistaken diagnosis.

**Albuminuria and Diabetes.**—Dr. Arthur R. Elliott, of Chicago, pointed out that albuminuria is quite frequent in diabetes and especially in the terminal stages. The cause of it evidently is the irritation of the kidneys produced by the passing of large amounts of sugary urine. Albuminuria is usually associated with the acid toxemia that develops commonly in diabetes, and this shows that there is a real kidney affection and probably a uremic element in the coma of diabetes. It is important then that the treatment of diabetes should be so conducted as to prevent so much sugar being passed as will irritate the kidneys, since this hastens the fatal termination.

**Hemoglobinuric Fever.**—Dr. Walter Shropshire, of Yoakum, Texas, pointed out that hemoglobinuria occurs always in malarial countries, but only in those in which the severest forms of malaria exist. Poisonous doses of quinine do not produce hemoglobinuria. This condition then is not due to the quinine, but to the malaria, but rather to the faulty administration of quinine. Dr. Shropshire has had but one patient suffering from the disease die, though treated with quinine hypodermically, and in that case the death took place after forty-eight hours and before the quinine had had its proper effect. Hemoglobinuria is an idiosyncrasy and is prone to run in families. Plenty of quinine should be administered because the parasite in these cases is very resistive. The average dose to begin with should be about 40 grains, then 20 grains should be given for three or four days.

Dr. Kraus, of Memphis, in discussing hemoglobinuria, said that he has treated 21 cases without a death. He does not believe in cinchonizing patients. Dr. Barrier, of Louisiana, said that quinine should not be administered in these cases, for the more is given the worse the patient becomes. It is like the old-time bleeding and may easily be carried to excess.

**Should the Tuberculous Know the Truth?**—Dr. Ambler says tuberculous patients should be frankly told that they had tuberculosis. The patient's serious cooperation is required for his recovery, and for this he must fully appreciate the nature of the affection from which he is suffering. This is the basis of the only rational method of therapeutics for the disease. For the moment patients will be discouraged, but they will brace up after a time and will eventually thank the physician for his candor.

**Tuberculous Peritonitis.**—Dr. Joseph Eichberg, of Cincinnati, said that tuberculous peritonitis runs a very insidious course, and that it is not always easy to recognize. There is single constant symptom. Ascites occurs very prominently, and some tenderness, with tendencies to constipation, but any or all of these may be lacking. For long laparotomy was considered to be curative of the disease. Now it is known that the cases which recover after laparotomy recover quite as well without any operation.

**Tuberculosis in the Negro.**—Dr. Seale Harris, of

Union Springs, Ala., said that tuberculosis was unknown among the native Africans, but is very common among the negroes. It was a rare disease among the slaves in the old times, but has become very common of late years. The negroes have small lungs, less lung capacity, and less chest expansion than the whites. Besides bad hygienic surroundings and the prevalence of syphilis among the negroes makes the disease more and more common. Lack of nourishment is a very important factor in this matter. The negroes have become an important source of infection, and there should be state sanatoria for tuberculous negroes, so that they may not become a source of infection to others.

## CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

*Held at Washington, D. C., May 12 to 14, 1903.*

### AMERICAN SURGICAL ASSOCIATION.

(Continued from Page 959.)

### Third Day—May 14th.

**Congenital Malposition of Cecum and Colon, with Enclosure of Ileum and Cecum in Membranous Sac.**—Dr. Leonard Freeman, of Denver, said that this patient was so very sick at the time of operation it did not seem possible for any intervention to be successful; nevertheless he opened the upper abdomen and found an enormously distended tumor, which at first was very difficult of identification. On close inspection, however, it showed itself to be a great sac containing the above mentioned viscera. Although Mr. Moynihan does not agree with the general statement that these herniæ often occur into Treit's fossa, there is reason to believe that they occasionally occur more often than his statistics seem to show. The contents of the sac in the case that he operated upon were gangrenous. The mesentery of the colon, which was unusually long, had become twisted, allowing its entrance into the sac and tortion had cut off the blood supply entirely. On opening the sac, it was found to be full of extravasated blood and decomposed material.

Dr. J. C. Bloodgood, of Baltimore, in discussing this paper, said that he once had a case in which a similar condition occurred as a sequel to a very simple operation of inguinal hernia. The patient vomited rather continuously after the anesthetic, but before very long he saw that he had a more complicated condition than the nausea of anesthesia to deal with. In thirty-six hours the hepatic dulness was obliterated and the leucocyte count was 16,000. The case was operated upon largely because of this finding, and a very complicated retroperitoneal hernia was discovered and liberated in time to save the

Dr. Ellsworth Eliot, of New York, had never seen such a case, and he asked if there were large blood vessels at the neck of the sac and whether Dr. Freeman had divided the neck.

Dr. Freeman, in closing, said that the interior mesenteric vessels were present in a very much dilated form, so much so that he was not able to divide or even dilate the neck of the sac.

**Sympathectomy for Exophthalmic Goiter.**—Dr. B. Farquhar Curtis, of New York, said that the number of cases of this condition which he had treated surgically was eleven. Of these, three had died of acute thyroidism. In sympathectomy the exophthalmos usually improves at once, the remaining symptoms persisting often for months. The chief line of thought in his paper lay in his remarks as to the etiology and means of avoiding acute thyroidism. The symptomatology of the condition was, he said, very simple and direct, and could not possibly be mistaken for anything else. The pulse went up to 160 to 180, and the temperature rose to 103° to 106° F. These symptoms were accompanied by the other evidences of high temperature, and death occurred suddenly or from acute edema in from twenty-four to forty-eight hours. Obviously sepsis can have nothing whatsoever to do with the causation of this interesting but exceedingly fatal complication, because in the first place all his wounds healed aseptically and furthermore the patients were dead before enough time had passed for bacterial invasion. Occasionally the patient recovered from acute thyroidism and probably one of the best indications lay in the temperature. He had noticed that the outlook was very bad if it rose above 103.5° F. The three theories which have been advanced to explain this condition were as follows: (1) the nervous origin; (2) the absorption theory, by which the excessive or pathological secretions of the thyroid were taken into the system, and (3) the absorption of the hematoma which so frequently forms at the site of operation. He believed the first supposition as to the origin of the condition to be the correct one. How did it happen that Kocher, who had reported fifty odd cases with but four deaths, should have had such a low mortality? It was instructive to note that of these fifty cases only six had been given general anesthesia and that all the deaths occurred in this series. It was evident then that he had had no mortality whatsoever in those cases of thyroidectomy in which he had operated by local anesthesia. The conclusions which we seem able to reach at the present moment are that exophthalmic goiter is curable in about 60 per cent. of all cases and that Jonnesco's operation of sympathectomy, if done on one side at a time and under local anesthesia, probably gives the better results.

Dr. T. W. Huntington, of San Francisco, said that if any action was to be taken in a given case of exophthalmic goiter, whatever was going to be done should be attended to before the patient became prostrated with the disease. He had operated on six cases only; on these he had done hemisection of the gland. He believes that the two most important points are, first, that it must always be done under local anesthesia, and second, that thyroidectomy is to be preferred to Jonnesco's operation. All his cases had been successful.

Dr. Willy Meyer, of New York, said that in discussing the two well-known methods of treatment, we should not forget that there was a third, viz., serotherapy, by which the patient is fed with goat milk, from which animals the thyroids were extirpated. Six patients were reported as cured by this treatment, and it certainly is significant that Merck has considered it of sufficient importance to prepare a serum which has similar results to the milk from these goats. The treatment is still *sub judice*. But enough has been done to bring the subject into prominence, and when it is remembered that the carnivora die, that herbivora undergo cachexial degeneration and that omnivora suffer in proportion to the amount of glandular tissue removed, it is not beyond the power of belief that there may be much more in this treatment than conservative people are prone to think.

Dr. Bacon, of New Haven, said that pathologically there are two types of exophthalmic goiter. They are characterized etiologically as being due to a hyperthyroidization, or to nervous changes. Fortunately for future operative intervention there are very positive criteria by which we can separate the types. Exophthalmic goiter arising from the first-named condition may be further classified as due to excessive or to perverted secretion. The criteria for simple excess are, first and most important, the exactness of the parallelism between the symptoms presented by the disease and those following the administration of thyroid extract; second, a presence of actual local change in the thyroid, which is manifested by the enlargement both of the vessels and of the gland. Perverted secretion on the other hand is characterized by the irregularity of the appearance of the three classic groups of symptoms. One always predominates over the other two. While we cannot look for as definite differential points in cases of exophthalmic goiter arising from nervous conditions, still it has been observed that the symptoms here are very apt to be unilateral.

Dr. Ochsner, of Chicago, said that seven or eight years ago he lost a patient from acute thyroidism. He then made up his mind that the condition was due to the fact that the gland had been rather roughly handled during the operation and that its internal secretion, whether perverted or normal, had been forced into the system in excessive quantities. Since then he has done the operation of thyroidectomy five times, and he thoroughly believes not alone that this is the preferable operation for the great majority of these conditions, but that thyroidism can be positively avoided by handling the gland very gently. He has found that the result from extirpation has been very prompt, the pulse having in one case dropped from 160 to 80 within a few hours after operating. He always uses a small drain.

Dr. Geo. Woolsey, of New York, reported a case which had died undoubtedly, he thought, from the employment of general anesthesia. Primary and secondary exophthalmic goiter should be distinctly separated. In the latter the outlook is excellent.

Dr. F. J. Shepherd, of Montreal, reported six cases with one death from thyroidism. Three are not absolutely well. He considers the question bearing on the primary or secondary characteristics of the condition as of the utmost importance.

Dr. J. C. Bloodgood, of Baltimore, said that so far as differentiation of these conditions went, unfortunately so far they had not been able to find any gross or microscopical difference between primary and secondary exophthalmic goiter. The difference, however, which exists between this form of enlargement of the thyroid and the normal gland is about the same as that which one sees between the lactating breast and the normal organ. He believes that for all cases, therefore, the operation of choice is the hemisection of the thyroid, sympathectomy being reserved for the relief of residual symptoms, if such exist.

Dr. Curtis, in closing, said that he has always been most careful not to handle the gland roughly, even though he has become convinced that the condition of thyroidism is a nervous one and not due to absorption from handling. Probably the benefit accruing from gentle handling lies more in reducing the nervous shock inflicted, rather than in limiting the amount of secretion squeezed into the circulation. Sympathectomy is in the distorted necks of these patients a difficult and often a bloody operation. He believes that the employment of local anesthesia will be, if ever successful, limited to chosen cases.

**Prostatectomy and Galvanocaustic Prostotomy** (Bottini's Operation).—Dr. Willy Meyer, of New York, said that one of these forms of direct attack upon the prostate is now considered preferable to the indirect methods advised by White and others. Of the two there is no doubt that the most surgical and the ideal is the removal of the gland. There is, however, a class of patients in whom this condition is certainly contraindicated. They are old men who have not long to live, whose environment is such as to contraindicate their taking the greater risk ot the radical operation. Without showing any discrimination, he took every case of enlarged prostate which presented itself at his clinic and performed 59 cases with the cautery. Of these 52 recovered. A very small mortality indeed when one considers the conditions under which the cases were operated upon. Three died from sepsis, two from spinal anesthesia and two from other causes; thirteen recovered absolute power over their bladders. In thirteen the recovery was not quite so perfect, but sufficiently good for practical purposes. Only one of the series was not improved at all. Seventy-five per cent. of these patients were able to stop catheter life entirely. He concluded that in our present light there are two useful operations for the treatment for hypertrophied prostate, that they were both direct, the indirect methods having practically passed out of consideration. The extirpation of the gland is undoubtedly the operation of choice, and it should be done through the perineal route, because this best preserves the integrity of the seminal vesicles. Very debilitated patients should have a Bottini done, but in the near future it is to be hoped that the operation of prostatectomy will have been so thoroughly worked out that the gland will be removed before the patient is prostrated from infection.

Dr. Leonard Freeman, of Denver, said that he had performed twenty Bottini operations and had got very good results with it. He agreed with the speaker, however, that it was not the operation of choice. He now reserves it, first, tor those cases where a general anesthetic cannot be given, and, second, where the disease is incipient.

Dr. Meyer, in closing, said that the object of his paper had been to call attention to the fact that both these operations had individual fields, and that no one should pretend to operate upon the prostate without being efficient in the technic of each.

**Gonorrheal Septicemia.**—Dr. Chas. A. Powers, of Denver, said that gonococci had been found in a pure or mixed culture in practically all the tissues of the body. It was really a grave mistake for the profession longer to tolerate the continued use of the expression "rheumatism" as a designation of this form of infection. He cited a profoundly interesting case in which he had been obliged to make a large number of incisions down through the periosteum. From all but one of these had flowed a thin serosanguinous discharge. On examining the cultures taken from each wound, it was found that the gonococcus occurred in pure culture in all save where the exudate had been purulent. Here there was a mixed infection with the steptococcus. Young thinks that the gonococcus in pure culture can produce pus, and this of course may very likely be so since one case alone is of very small weight. An important characteristic in the history of this patient was that for months the wounds obstinately refused to heal, but finally at the expiration of about a year, union was complete and the function of the joints was tolerably good, although a certain amount of disability will remain.

**Myositis Ossificans Traumatica.**—Dr. J. F. Binnie, of Kansas City, gave the theories which bear upon the origin of this very rare condition. The most probable seems to him to be the belief that with the advent of the trauma the muscle in violent contraction tears off a greater or less number of bone cells from its periosteal insertion, and as the torn fragment contracts, it drags these bone cells along with it and distributes them along its path. These subsequently continue their bone forming function and the long spicule of bone often seen in these patients results. Another theory seems much less probable. It depends upon the supposition that there may be embryonic remains, as was suggested by Cohnheim. Very little can be gleaned as to the origin of these tumors from a study of the method of ossification, because it is well known that almost always the two well-known methods work together in the formation of the new bone. Clinically these growths cannot be separated from ordinary exosteomata whether they be attached or free.

Dr. S. H. Weeks, of Portland, Maine, remembered a case in which the bone tumor developed in the great pectoral muscle after an open fracture of the humerus.

**Methods of Instruction in Surgical Pathology, Lantern Slide Illustration.**—Dr. Joseph C. Bloodgood, of Baltimore, presented very briefly the concise and excellent method which he uses at the Johns Hopkins school. By this method not alone are all the characteristic phenomena of rare cases preserved for years, but they are presented seriatim to the student, so that he is able to follow the case clinically as well as pathologically from the moment it enters the hospital until its discharge or its death. He showed a set of photographs of gross and minor specimens which were taken at random from the series in actual use by the students.

Dr. W. W. Keen, of Philadelphia, said that this method of teaching appealed to him so keenly that he wished it might be possible to find a publisher for Dr. Bloodgood's exquisite monographs, so that in schools less fortunately situated than the Hopkins the admirable technic might do its good work.

**Intestinal Localization.**—Dr. Geo. H. Monks, of Boston, said that he had endeavored to determine not alone the position, but the direction of the small gut in 24 cadavers. The technic had been to make a very small incision through the abdominal wall, to pull out a knuckle of gut, to apply to it the deductions from his observations, to tie a tag stating what position it was supposed to occupy, and to return it to the abdomen; 180 of these tags were placed and the average error was found to be only two feet. Considering that the length of the gut may vary from 14 to 30 feet, this error was seen to be pleasingly small. In working out his scheme he had been very much helped by threading the gut upon a stick, much as one would a worm upon a hook. Holding it up until the mesentery was taut showed the peritoneal cavity to be very clearly divided into two cavities,—a minor, small, and to the right; a major, large, to the left and communicating with the cavity of the pelvis. This should have a bearing upon the technic of irrigating the abdominal cavity for sepsis. He presented a chart which showed very clearly the differential points which enabled him to locate the position of the gut so accurately.

**The Lesions Which Augment the Development of Tetanus and Other Infections.**—Dr. L. A. LaGarde, of Washington, presented the microscopical pathology of bullet wounds in the tissue. His conclusions were that inability to infection depended directly on the amount and diffusion of the hemorrhages which take place in the margins of the path made by the projectile. These hemorrhages, indeed, he showed, were much more important in determining pus formation than the number of germs which were sewed. This was demonstrated very beautifully by dusting the surface of the body with powdered charcoal. Naturally this charcoal was distributed in greater abundance along the anterior course of the bullet than in its later regions, but it is well known that pus formation is much more constant at the wound of exit than at the wound of entrance. These hemorrhages then are the positive factors in pus formation, given a very few bacteria. Their distribution and extent depends directly on the size and upon the speed of the bullet.

**The Operative Reductions of Old Dislocations of the Elbow.**—Dr. Emmet Rixford, of San Francisco, reported a case in which he had had excellent results by a simple incision followed by replacement of the parts. The X-Ray had been most valuable to him in obtaining this result.

Dr. J. B. Murphy, of Chicago, said that arthroplasty or a placing between the severed fragments of bone the aponeurosis of a neighboring muscle was a much better technic than the wet replacement of the Germans. Even suppuration does not interfere seriously with the efficacy of this technic.

**The Drowning of Patients in Fecal Vomit as a Complication of Operations During Appendicitis and Obstruction of the Bowels.**—Dr. E. W. Andrews, of Chicago, said that this condition, which might broadly be stated to exist as a possible complication of any septic abdominal condition had not yet received the attention which it deserved. It is characterized by the vomiting in overwhelming quantities of the contents of the gut which undoubtedly are allowed to follow gravity by a relaxation of the sphincters of the stomach incident to narcosis. It is a frightfully grave condition, resuscitation being almost impossible. As it never occurs except during general narcosis, it is an indication for spinal or local anesthesia.

Dr. J. M. T. Finney cited three cases, all of which had died from this complication.

**The Pathology and Treatment of Tardy Postoperative Intestinal Obstruction with a Report of Cases.**—Dr. Ellsworth Eliot, of New York, said that as was well known, the condition might arise from circumferential bands arising from the cicatrix, from an improper position of the gut, or from bands springing from the omentum. Prophylaxis consists in exercising the very greatest care in handling all the viscera, particularly the small intestine. In wounds occurring laterally, it is usually possible to cover suture lines and stitches, which should be as few as possible, by omentum, otherwise by tissue or cargyle membrane. Drains should never be employed unless absolutely indicated, and they should be as small as possible. Other preventive points consist in washing out the alimentary canal from both ends so as to reduce the irritation to a minimum and in changing the patient's position or that of the bed as often as possible. Finally the patients in whom there is a possibility of the development of obstruction should be advised of this danger, so that they may report to the physician before it is too late.

**Traumatic Paralysis of the Circumflex, Long Thoracic and Suprascapular Nerves.**—Dr. F. E. Bunts, of Cleveland, said that these injuries might be single or multiple, although the circumflex paralysis is by far the most common. This nerve is frequently not injured in its trunk, but in its ultimate terminations in the deltoid muscle. This is an important point in the defence of malpractice suits, which are known to be so frequent after injuries to the shoulder-joint. The atrophy of the deltoid leads to the belief that the dislocation had not been reduced.

**Contributions to the Surgery of Cerebral Tumors.**—Dr. Geo. Woolsey, of New York, said that only 2 to 8 per cent. of these cases are now suitable for operation because of our inadequate methods of localization. He called attention to two very important additions, viz., the X-Ray and percussion. He concluded that the prognosis is as good after operating for localizable malignant growths of the head as elsewhere.

**The Treatment of Surgical Shock by Adrenalin.**—Dr. Edward Martin, of Philadelphia, said it was safe to give at least 100 times as much of this drug as was ordinarily used. The stimulating effects are transient. This is a very valuable point, because if injected intravenously, it is the most powerful cardiac and respiratory stimulant known, and if we can repeat the dose as often as may be necessary, it makes it a therapeutic entity of great importance. He has been able to bring dogs, dead to all appearance for fifteen minutes, back to such lusty life as to have to chloroform them, and he had rescued at least one of a half-dozen hopeless cases in which he had tried it on human beings.

**Gunshot Wound of Brain with Seven Fragments of the Bullet. Localization by Sweet's Method Made Operation Inadvisable.**—Dr. W. W. Keen and Dr. W. M. Sweet, of Philadelphia, presented this communication. Dr. Keen said that Dr. Sweet had done the work and he had reaped the benefits. He cited a case, which was that of an English lad who had been sent here by the advice of Messrs. Treves and Horsley. He and Dr. Sweet localized the bullet at such a point as to make it almost certain that it had traversed the brain from before backward, inward and upward, and rebounded from the posterior margin of the brain case to occupy a position near the lateral ventricle. From its location and from the fact that the surgeon in removing it would do a great deal of damage to the cortex and because the lad's paresis was improving rapidly, his parents were allowed to take him home without operation, but with the injunction that the bullet should be removed if at any time he had persistent headache or a single epileptic seizure.

Dr. N. P. Dandridge was elected Chairman for 1904. Place of meeting, St. Louis, Mo.

## AMERICAN PEDIATRIC SOCIETY.

*Fifteenth Annual Meeting, held at Washington, D. C., May 12 to 14, 1903.*

### FIRST DAY—MAY 12TH.

**President's Address.**—Dr. J. P. Crozer-Griffith, of Philadelphia, thanked the society for the unexpected honor conferred upon him, and said that he would not take up the time by considering some medical subject, but had chosen to present some facts which would be quite as interesting to the society. He said that while the knowledge of work well done, and the consciousness of having helped so many little patients was in itself gratifying to the physicians, any work that had been done to improve the treatment of the afflicted children was more far-reaching. This society had accomplished much to advance the science of pediatrics. Three hundred and ninety-two articles had been presented to the society since its birth, fifteen years ago, many of these having attracted international attention. The work, individual and collective, on diphtheria, infantile scurvy and disorders of the digestive tract had been of especial value. One thousand five hundred and thirty-five articles had been contributed to medical literature during the past fifteen years by members of the society, thirty text-books had been written and several members had contributed sections to the composite works. Two journals of pediatrics had been established. Dr. Griffith urged the members to overcome the present tendency to become too practical, and not to allow financial interests to interfere with scientific research, both for the maintenance of the reputation of the society and for the advancement of this important branch of medicine.

**Synopsis on Some of the Renal Lesions in Infancy.**—Dr. C. F. Martin and Dr. F. M. Fry, of Montreal, had prepared this paper, which was based on a study of a hundred cases of nephritis in infants under three years of age. Sixty-five were fed on modified milk and 35 were breast-fed. The maximum specific gravity of urine in these cases was 1.028, the lowest was 1.001, an average being 1.006. In 19 cases ascites was present, in all cases albumin was present in variable quantities, in only ten was albumin present without casts. In 26 cases there was an excess of uric acid.

**Nephritis in a Four-year-old Boy Having Only One Kidney.**—Dr. A. C. Cotton, of Chicago, presented the case of a child who had been a healthy baby. When three years old he had measles, and six months later developed pneumonia. After this last illness there was some edema of the ankles and around the eyes, and he had frequent scanty high-colored micturitions. Diuretics, hot packs and saline injections per rectum were employed. The child grew worse, with a few periods of apparent improvement, and finally died of uremic intoxication. During the progress of the disease the urine showed a progressive diminution in the urea excreted, and in the amount of total solids. The presence of albumin was constant in variable quantities, granular, hyaline and some waxy casts had been found. On autopsy the plural, pericardial and peritoneal cavities were found to contain clear serous fluid. The right kidney weighed sixty-five grams, the capsule was not adherent, but left irregular, rough patches when removed; the cortex was pale and markings indistinct. The left kidney was replaced by a triangular body about one centimeter in length from apex to base. An artery and vein were traced from this hypoplastic body to the aorta. The right ureter was normal, the left terminated in this rudimentary kidney and contained no demonstrable lumen.

**Edebohls' Operation.**—In this paper Dr. T. M. Rotch, of Boston, reported a case of a nine-year-old child with a severe nephritis, who never had had scarlatina. Edebohls' renal decapsulation was employed and the child died two weeks later. Dr. Rotch lamented the fact that renal disease was at present so little understood, and that there was as yet no appropriate nomenclature to designate the various pathological conditions. The marked beneficial results that had been attributed to this operation had attracted much attention, but many of these cases may have been functional cases in which recovery would have taken place had no operation been resorted to.

Dr. G. M. Edebohls, of New York, in discussion, said that at present he had nothing additional to add to the statements made in an article printed in the *Record*, March 28, 1903. He said definite results could not be pronounced under four or five years.

Dr. B. K. Rachford, of Cincinnati, said that most cases of nephritis in children were doubtless due to an acute infection of some kind and tended to complete recovery, while in adults the tendency was for the process to become chronic. For this reason the value of the operation should be determined by results obtained in adults. It was impossible to determine the value of operative measures in cases of less than six months' standing, for the ultimate conditions might have been the same or perhaps more favorable without operative interference.

Dr. Rotch said that chronic nephritis did exist in children, and occasionally with fatal results. Nephritis of adults and that of children were two distinct conditions, and each should be studied separately in order that it may be discovered which cases are favorable and which unfavorable for operation.

Dr. C. G. Jennings, of Detroit, reported a case of chronic renal disease in a child in which there was severe persistent pain over the left kidney. The urinary findings led to the diagnosis of chronic interstitial nephritis. Operation was resorted to, but the exposed kidney showed no macroscopic pathological conditions. Renal decapsulation was done, resulting in complete recovery in two months.

Dr. A. C. Cotton, of Chicago, said that chronic nephritis was not so very rare in children, he had seen four cases during the past year.

**Clubfoot Operated on by Prof. Lorenz.**—Dr. S. S. Adams, of Washington, D. C., showed this case, which had previously been subjected to five tenotomy operations with but little benefit. The deformity was extreme, the child standing on the outer aspect of the little toes. Prof. Lorenz corrected the deformity, relying entirely on hand pressure, devoted twenty minutes to each foot. The feet were encased in plaster casts for three months, the child being able to walk in them with comfort; the casts, which were removed to allow examination of the feet, were to be reapplied for several months longer.

**Abscess of the Lung.**—In presenting a second case Dr. Adams described the physical signs in the chest of a two-year-old child, which gave evidence of fluid in the left lower chest, and of incomplete consolidations in the left upper chest. The child had an irregular febrile temperature. By means of the aspirating needle about a dram of pus and bloody serum was obtained from the left upper chest, a diagnosis of empyema was made, but no pus was found in the plural sac at operation. On autopsy an abscess was found in the left upper lobe, the pus being due to a streptococcus infection. The right lung was normal, and no other abscesses were found in the body.

Dr. Cotton said, in discussion, that pus was frequently very difficult to find, being walled off by the adhesions of a fissural pleurisy.

(To be continued.)

## ASSOCIATION OF AMERICAN PHYSICIANS.

(Continued from Page 953.)

THIRD DAY—MAY 14TH.

The President, James Stewart, M.D., of Montreal, in the Chair.

**Hereditary Ataxia.**—Dr. Lewellys F. Barker described the pathological changes found in the brain and spinal cord of two brothers dead of hereditary ataxia. In both attacks began before twenty, the hereditary element coming through the mother, as it does much more frequently. Both patients were intelligent and educated. Their brains were excellently fissured, rather more normal than less. The principal changes found were atrophy of the direct cerebellar tract and of Clark's nucleus on both sides. There was besides an elective degeneration of the dorsal funiculi involving especially the fibers which correspond to the so-called third fetal system of Trepinski. This system develops late in fetal life, being found in fetuses of 42 cm. and more. The interesting feature of the finding is that the lesion which by theory Marie anticipated as the pathological basis of the disease, does not exist. Three neuronic systems below the cerebellum and not the cerebellum itself are affected. The cerebellum is healthy and Purkinje's cells are normal.

In discussing the paper, Dr. Starr, of New York, said that these findings show the existence of two nervous paths for the muscular sense and give the explanation of the success of Fraenkel's method of treating tabes by training. The voluntary paths are used instead of the involuntary ones, which were the original direction of the impulses.

**Unresolved Pneumonia.**—Dr. Simon Flexner, of Philadelphia, discussed the autolysis of exudates, especially as they occur in pneumonia. Ordinarily the white cells of the exudate bring with them a ferment which fluidifies and causes an emulsion of the pneumonic exudates and this is then absorbed. In unresolved exudates there is more fibrin than cells and in order to bring about absorption of this a certain amount of vascularization of the exudate takes place. From these newly-formed blood vessels the white cells find their way to bring about the autolysis of the exudate more slowly, but in practically the same way as in the more rapidly resolving exudates. It is probable that the prognosis of a pneumonia as regards resolution may be judged from the comparative amount of fibrin and cells present in the expectoration at the beginning of a pneumonia.

**The Adrenal Gland and Antitoxin.**—Dr. A. C. Abbott, of Philadelphia, described a series of experiments made in order to determine if the serum of rabbits, that had been rendered immune to the effects of adrenalin by the injection of increasing doses of extract of adrenal glands from guinea pigs, might exercise a destructive process on the same adrenals when still in the living animals. The object also was to determine if repeated injections of the active principle of the adrenals would not produce an immunity of something the same kind as that which is produced by antitoxin. In Dr. Abbott's experiments, while mainly negative, contain a number of suggestive points as regards cytolysis and certain other properties of blood when influenced by specially active principles. His conclusions were stated about as follows: (*a*) It is doubtful if the repeated intraperitoneal injection of rabbits with macerations of fresh guinea pig's adrenals results in the elaboration of a substance in the rabbit's serum that is destructive to the guinea pig's adrenals in situ; (*b*) the most marked effect of the injection of guinea pigs with the serum of rabbits after such treatment is blood destruction. The hemolytic activity of the rabbit's serum for guinea pig's erythrocytes is, as a rule, very much increased; (*c*) in no case were the adrenal glands of the guinea pig demonstrably affected, beyond more or less congestion, by the intraperitoneal injection of the serum of rabbits that had received repeated injections of guinea pig's adrenals; (*d*) the serum of rabbits treated with guinea pig's adrenals was in vitro not only actively hemolytic for guinea pig's erythrocytes, but caused more or less pronounced agglutination of fresh macerations of the adrenal glands; (*e*) the serum of rabbits immune from guinea pig's adrenals differs from that of rabbits immune from guinea pig's blood in being less toxic. The only definite lesions of the adrenals of guinea pigs noted in these studies were produced by the injection of serum from rabbits immune from guinea pig's erythrocytes; and the general character of these lesions leads to the suspicion that they were associated with suppression of vascular supply due to the development of agglutinative thrombi; (*f*) the remarkable variations in the susceptibility of rabbits to the toxic action of the active principle of the adrenal gland made it impossible to determine the minimum lethal dose of this substance by the method employed, *i.e.*, by intraperitoneal injection of the substance in solution; (*g*) the repeated injection of rabbits with increasing doses of the active principle of the adrenal results in more or less of tolerance, but the serum of such animals has neither more nor less neutralizing (antitoxic) effect upon solutions of the active principle than has the serum of normal rabbits. The condition is probably not, therefore, one of immunity and it is questionable if antitoxins are elaborated as a result of such injections.

**The Nephrotoxins.**—Dr. R. M. Pearce, of Philadelphia, read a paper discussing the effects of the injection of nephrotoxins upon various animals. These substances were prepared by causing the degeneration of the kidney of an animal while it is still in situ by various irritants and by introducing kidney tissue under proper precautions as regards sterility, especially into animals of the same and different species. None of these supposed nephrotoxins cause any increase of blood pressure or any signs of ordinary kidney trouble. Certain dogs were found, however, to be suffering from spontaneous nephritis. The serum of these dogs introduced into the veins of other dogs whose kidneys were healthy produced all the symptoms of nephritis. The serum of these second dogs had a like effect, but to a less degree on the third dog. You can see then that certain substances in the blood of animals suffering from nephritis may be productive of nephritis.

**Capsule of the Kidney.**—Dr. S. J. Meltzer, of New York, presented a report of observations by Dr. Haven Emerson, of New York, on the changes noted in the kidneys after their decapsulation in various animals. In all cases there was a regeneration of the capsule of the kidney. When kidneys surrounded by the capsule were painted with a solution of potassium iodide this substance was not absorbed into the urine. When painted on the decapsulated kidney it was at once absorbed. The kidney capsules are important then in protecting the kidney from substances in their neighborhood. They also have a biological significance, and may not be removed with impunity. In certain cases after decapsulation, new blood vessels were formed from surrounding organs to the surface of the kidney, but adhesions took place to the liver and pancreas, and colored material injected into these kidneys was afterward found in these organs. This constitutes a new danger of the operation, which may possibly not apply to human beings. It seems important, however, that experiments with regard to the function of the kidney capsule and its importance, together with the danger of its removal, should be studied experimentally on animals, rather than on human beings, as seems to be the tendency at the present moment.

**Successful Decapsulation of the Kidney.**—Dr. James Tyson, of Philadelphia, reported a successful case of decapsulation of the kidney, Edebohl's operation, for chronic Bright's disease. The patient was a girl of nine years who had suffered from severe scarlet fever, followed by acute nephritis, which in the course of three years had developed to a high grade parenchymatous nephritis. There was large albuminurea with very bothersome ascites and anasarka. The dropsy and ascites made it impossible for the patient to get out of bed. The abdomen was tapped a number of times, but promptly refilled, and all medical treatment was absolutely unavailing. Under the circumstances the hope held out by Edebohl's operation seemed sufficient to justify its performance.

**Result of Operation.**—The operation upon the right kidney was performed by Dr. Frazier, and there was an immediate effect upon the anasarka, which disappeared completely. The quantity of urine rose on successive days from 21 to 42 and then to 72 and 102 ounces in the twenty-four hours, and finally became an average of 60 ounces. The ascites disappeared completely in connection with this diuresis. The quality of the urine also at once improved. The albumin diminished and the casts were less frequent. When the patient was allowed to get on her feet, however, the albumin and casts increased somewhat. Two months later the decapsulation of the left kidney was done and was followed by complete disappearance of the albumin and casts. The patient was kept in bed for some time and then was allowed to get up and go around, when the albumin and a few casts once more appeared.

**Result Upon the General Health.**—The patient's general health at once improved. She gained in strength and in appearance, and her digestion improved so as to enable her to eat heartily. Notwithstanding warnings she plays around very freely and considers herself entirely well. The improvement is so marked that Dr. Tyson would not hesitate to recommend the operation under similar circumstances, since in this case it really proved life saving. The rationale of the operation is not easy to understand. It has been claimed that a new blood supply is furnished to the kidney through the adhesions which form. In one case a floating kidney operated upon by Dr. Clark, of the University of Pennsylvania, an artery was found entering the convexity of the kidney and the real renal artery was found to be obliterated because of twists at some time during the movements of the kidney. A new blood supply would not seem impossible then. The therapeutics of chronic nephritis were practically at a standstill. This operation gives a new hope, and though it cannot as yet be decided in what cases it may be suitable a distinct gain has been made.

**Further Cases.**—Dr. A. McPhedran, of Toronto, reported a case in which decapsulation of the kidney was performed for chronic Bright's disease that was threatening life. The result was very satisfactory. Shortly after the operation the patient acquired pneumonia, yet went through this successfully. The urine became much freer and the albumin was reduced to scarcely more than a trace, and the general improvement was very marked. Before the operation the person had been very much emaciated. The appetite has been restored, the digestion is good, the patient has gained in weight, and though the albumin has returned somewhat the operation is considered by the patient as being very successful. In this case Reginald Harrison's explanation, that slitting of the capsule decreased the tensity of the kidney substance and so permitted free circulation was not the reason for the improvement, since the kidneys were not confined within a tense capsule.

**Three Similar Cases.**—Dr. Cutler, of Boston, reported three decapsulations of the kidney. The first case improved shortly after the operation, but most of the symptoms recurred and death took place in six months. At the autopsy complete regeneration of each of the capsules was found to have taken place. In the second case after operation an abundance of fat was found in the urine. The albumin casts disappeared, however, and the anasarka and dropsy did not recur. Notwithstanding the fact that there are slight traces of albumin in the urine and that she had been warned of the necessity of exercising great care this patient earned her living as a servant all last winter, and considers herself perfectly well. In the third case the symptoms were quite desperate. It was postscarlatinal nephritis of five years' duration, and the mother decided in taking the chances of operation. Now, a year after the operation, the child is in blooming health and resents the restraint which has been considered necessary in order to give full opportunity for complete establishment of a new circulation, if that is to be Nature's curative method. The child has not gone to school, but has frequently stolen out to play with other children, has increased in weight and health, is growing normally, has a good appetite and feels perfectly well.

In closing the discussion, Dr. Tyson said that the operation seems to promise more for children than for adults, but the limits of its possibilities for good are not as yet known. Experimentally it has often been noted that after removal of the capsule in animals it is regenerated.

**Paroxysmal Hematinuria.**—Dr. William Gilman Thompson, of New York, reported two cases of this extremely rare disease, which have been under observation now for respectively sixteen and fourteen years. The first, a young man of twenty years, under observation for sixteen years, suffers from hemoglobinuria on slight exposure to cold or after fatigue or at times after severe mental emotion. The attack is ushered in by chill, fever, a burning itching of the face accompanied by giant urticaria and by paresthesia over the surface of the body. Stiffness in the use of muscles occurs. Shortly after this the urine becomes progressively darker, urination becomes imperative and frequent, and in the dark urine hemoglobin is found, with a very few red blood corpuscles, on one occasion. Occasionally the condition is complicated by hydrops articulorum, that is, extensive effusion into the joints, and occasionally discoloration. This is not tender or painful, however, to such a degree as to interfere with his moving about and is evidently only the ordinary synovial fluid increased by serum in which hemoglobin is dissolved.

(To be Continued.)

## AMERICAN GYNECOLOGICAL ASSOCIATION.

### Second Day—May 13th.

(Continued from Page 1007.)

**The Etiology, Pathology and Treatment of Puerperal Sepsis.**—Dr. Hiram N. Vineberg, of New York City, contributed a paper with this title. He said that severe sepsis might be caused by a variety of pathogenic germs. The variety of germ found in the uterine discharge in a given case was no criterion of the severity of the case and formed no safe guide as to prognosis or as to the treatment to be adopted. Bacteriological examination of the blood was of little value, either from a prognostic or therapeutic standpoint. The treatment of puerperal sepsis must be based chiefly upon the clinical history and physical signs of each individual case. Wounds or infection in the perineum, vagina or cervix are to be treated on general surgical principles of irrigation and drainage. Curettage was indicated where there are evidences of placental decidual residue in the uterus independent of the variety of bacteria that may be found in the uterine cavity. In those rare cases in which adherent and sloughing placental tissue can not be removed, either with the sharp curette or fingers, hysterectomy was indicated, provided the patient was not already moribund. Hysterectomy was also indicated in cases of septic endometritis, or infection of the placental site, so long as the infection was still limited to the uterus, and when the symptoms steadily grew worse in spite of uterine irrigation, with or without curettage, and appropriate hygienic stimulating treatment. In abscess of the uterus the abdomen should be opened, and, when feasible, the purulent foci were to be drained and the uterus preserved. If the uterus be studded with small abscesses, hysterectomy was indicated. The abdominal was to be preferred to the vaginal route for hysterectomy. If the infection passed from the uterus into one or other tube and set up a violent grade of inflammation, the abdomen should be opened and the infected tube removed before a general peritonitis developed. When the infection passed through the uterus and set up a general peritonitis, a case might occasionally be saved by a timely abdominal section and drainage. In cases of parametric exudates, the treatment should be of a conservative nature, and surgical intervention was indicated only when there were evidences of pus formation. In obscure cases in which the pathological lesion cannot be determined, and the symptoms were steadily growing worse, it might be advisable to open the abdomen to search for a hidden purulent focus, or for a circumscribed slough of the uterus. The procedure proposed by Trendelenburg, and executed by him and others, of ligating the pelvic veins when they became infected and thrombosed, was worthy of further trial.

Dr. William R. Pryor, of New York, in the discussion, took issue with the essayist in regard to the significance of certain pathogenic germs. In the mild cases of puerperal sepsis, very rarely was the streptococcus present, while in the severe ones streptococci were found. In the mild forms of the disease many other kinds of germs were found, chiefly staphylococci and saprophytic bacteria. The form of puerperal sepsis which demanded careful attention was due to the streptococcus.

Dr. Edwin B. Craigin, of New York, related his experience at the Sloane Maternity. He was free to confess that in this institution infection occasionally occurred, because cases were taken undelivered, no matter whether they had been handled by midwives or by tyros. Patients were admitted whether they were just in labor, or whether they had been in labor for several days. Occasionally patients had been lost from puerperal infection, although pathologist and bacteriologist were unable to find the streptococcus. A number of severe cases had been observed in this maternity in which a variety of bacteria were found in the uterus. In the management of puerperal sepsis, he emphasized two points: (1) To make sure the uterus was emptied, and (2) in making certain that it was emptied, do just as little damage to the inside of the organ as possible.

Dr. J. Whitridge Williams, of Baltimore, Md., laid stress on the value of bacteriological examinations of the uterine lochia and of the blood. In many cases there was no definite indication for treatment from such examinations; yet there was no doubt in his mind that important and valuable information as to the condition of the patient could be elicited in this way, more particularly by an examination of the blood. He had seen but two cases of puerperal sepsis in which he felt operation was distinctly called for.

Dr. Matthew D. Mann, of Buffalo, spoke of gonorrheal infection in connection with the puerperium. Recently he saw an interesting case in consultation. The patient, when he first saw her, had been sick for more than a week. Her temperature ran as high as 111° F. before death. She had been having a temperature of from 107 to 108° F. for a number of days before he saw her. Her pulse was not exceedingly rapid, it being only 120. Examination of the discharges by several competent bacteriologists showed pure cultures of the gonococcus. There was no other germ present in any of the secretions. He thought the infection would possibly localize itself and the woman would recover; but the joints and heart became affected, and the patient died after having had a high range of temperature for three weeks.

Dr. Gill Wylie, of New York, said there could be no question but that surgical intervention was indicated in some of the severe cases of puerperal sepsis. Of his first nine cases, treated at the Bellevue Hospital many years ago, seven were treated locally, and two surgically. He believed the uterus should be emptied in every case of severe streptococcus infection connected with the puerperium.

Dr. Edward P. Davis, in speaking of hysterectomy in cases of puerperal sepsis, stated that this operation had nothing definite to support it except in rare cases of adherent placenta. A method which yielded good results, where irrigation had failed, consisted in opening the abdomen and inspecting the uterus, tubes and ovaries, freeing adhesions, etc., and, if there was a collection of pus found in the tubes, draining by means of iodoform gauze carried through into the vagina, separating the organs from abnormal adhesions.

Dr. Malcom McLean referred to the curette as a dangerous instrument in cases of puerperal sepsis in the hands of the average general practitioner. Emptying of the uterus was an absolute necessity in some cases, especially where there was evidence of putrid absorption, with chill, and sudden high temperature.

Dr. Henry D. Fry said that the practice at the Columbian Hospital, where a large number of maternity cases were observed, if the patients were seen in the beginning of sepsis and the infection seemed to be confined to the uterine cavity, the first thing done was to thoroughly clean out the uterus. After having taken a culture, active treatment of the uterus was suspended until the result of the culture was made known. If there were retained pieces of placenta, blood clots, attended with a foul odor, producing infection, the indication for cleaning out the uterus was clear. On the contrary, if the culture showed streptococcus, staphylococcus, colon bacillus, or gonococcus, or any of these infective agents, the uterus was left alone. In cases of streptococcus infection he believed the use of the curette would do a great deal of harm, in that it would break down the protective zone of inflammatory tissue which was thrown out by nature and would cause ultimately a general systemic infection.

Dr. Herman J. Boldt, of New York, said experience had taught him, so far as the treatment of puerperal sepsis was concerned, that a bacteriological examination of the secretions from the vagina or from the uterus, or a bacteriological examination of the blood, furnished no indication whatever, because there was usually a mixed infection, both streptococci and staphylococci being found in the secretions of the uterus or vagina. Such patients frequently manifested mild clinical symptoms, although operative intervention was not indicated. In all cases that came under his care, examinations of the secretions and of the blood were invariably made, and in patients, who showed bacteria in the blood, even a pure staphylococcus infection, the general condition of the patient did not seem to indicate the necessity of surgical intervention, consequently they were left alone, and recovered. On the other hand, many patients showed absolutely nothing in the blood, yet they died, so that as the result of the accumulated experience, bacteriological examinations of the secretions and of the blood of such patients did not give a definite clue as to the indication for treatment. Hysterectomy was of no avail in the intense cases of puerperal sepsis, particularly the foudroyant forms, as the patients died within a few days.

Dr. Seth C. Gordon thought surgical treatment was undertaken too early in some cases of puerperal sepsis. If there were abscesses of the Fallopian tube, they should not be opened until one was quite sure that he could make a straight incision from the vaginal vault into the abscess cavity without having any doubt as to whether pus was limited to the top of the vaginal wall. Every time an abrasion was made in the uterus or vagina with the curette or knife, a new avenue of infection was opened up and caused in many cases a great deal of harm.

Dr. H. G. Wetherill referred to the Carosso method of treatment of puerperal sepsis, as advocated by Dr. Edward J. Ill, of Newark, N. J., several years ago. Its value was unquestionable.

**Repetition of Cesarian Section on the Same Patient: The Experience of the Boston Lying-in Hospital.**—Dr. Charles M. Green, of Boston, read a paper with this title. After a brief summary of the experience of the Boston Lying-in Hospital, with repeated Cesarean sections, the writer raised the question whether it was justifiable, in performing Cesarean section for either an absolute or an elective indication, to remove normal organs or to resort to other procedures with a view to preventing subsequent pregnancy and the risk of a repeated section. The writer sought to answer this question in the negative and invited discussion of his views. Reference was made to a paper read by Dr. Coe at a meeting of the Society in New York in May, 1896, entitled "Cesarean Section; Suture of the Uterus *versus* Total Extirpation." Of nine repeated sections, all performed on a relative indication, four were done, one each, by four members of the staff, and five by the author. Two were done after labor had been in progress for nine hours each, and seven at an elected date before labor began. One patient had her first section without the hospital; six had their first and second, and one her first, second, and third sections, within the hospital. In one case there were no adhesions; in seven cases there were more or less adhesions; the duration of operation was from 39⅓ minutes to one hour and twenty-four minutes. In the case that died of shock the duration was forty-eight minutes. In one case the utero-abdominal adhesions were so extensive that the fetus was delivered without opening the peritoneal cavity, and the time of operation was thirty-eight minutes. The nine infants were discharged well; and of the nine mothers, one died, a maternal mortality of 11 per cent.

These results were not reported as unique or remarkable; repeated sections had resulted favorably in other clinics. But they were reported in the hope of influencing opinion that the time had come when the Society should withhold its approval of the doctrine that women should be sterilized at their first Cesarean section, in order that they may not be subjected to the risks of a repeated section.

**President's Address.**—This was delivered by Dr. Joseph E. Janvrin, of New York City. After paying fitting tributes to Drs. John Byrne, T. Gaillard Thomas, and Edward W. Jenks, Dr. Janvrin discussed the subject proper of his address.

**Surgical Treatment of Early Diagnosed Cancer of the Uterus, More Especially by Hysterectomy.**—Dr| Janvrin pointed out the conditions in which vaginal or abdominal hysterectomy held out good hopes for a radical cure; also the conditions in which the operation held out some prospect of a radical cure, and certainly a prolongation of life with a more comfortable existence than could possibly be hoped for if hysterectomy were not resorted to.

He took up the development of cancer in and from the cervix. His own observations as to the extension of epithelioma beginning in the cervix were somewhat as follows: (1) Up and into the cervical canal; (2) up and into the uterine body; (3) to the tissues surrounding the cervix, the parametrium, especially; (4) downward upon the vaginal mucosa, and after a certain time through the mucosa into the wall itself.

The author, after quoting freely the statistics of other writers, both European and American, regarding cancer of the uterus, stated that his own statistics up to January 1, 1899, were as follows: Abdominal and vagino-abdominal hysterectomies: twelve cases, two cured, more than eight years having elapsed since operation. Six recurrences. Four deaths from operation (two from shock, one from septicemia, and one from uremia). Percentage of cures, 16.6. Vaginal hysterectomies: Thirty-eight cases, ten permanently cured; fifteen recurrences; four deaths from operation; ten lost sight of after a few months; percentage of cures, 26.3. Total number of cases, 50; twelve cured; general percentage of cures, 24.

He believed that vaginal hysterectomy, with removal of as much parametrium as is possible by this method, and also the removal of the upper half inch or more of the vagina, would accomplish just as much as any other method and, at the same time, carried with it the least danger as an operation *per se*, for it was extremely rare that a patient succumbed to this operation. It was by following out this rule that the statistics of his own case up to January, 1899, had been so favorable. During the past four years he had extended the field ot operation for the purpose of removing a highly offensive local condition, and in that way making a longer lease of life more comfortable to the patient and less offensive to herself and her friends. The use of the electric cautery clamp, as improved by Dr. A. J. Downes, should give the best results in this class of cases. The author's object in his address was to give (1) the conditions under which hysterectomy should always be done for cancer of the uterus, leaving it as a matter of choice to each individual operator as to whether he selects the vaginal or the abdominal or the combined vagino-abdominal route; and, at the same time, to fortify this position with sufficient statistics, at home and abroad, to make the position tenable, and to impress upon the profession at large the absolute necessity of recognizing the early symptoms, and then seeking the advice and assistance of some surgeon who has had a good amount of experience in these cases, so that hysterectomy could be done when it ought to be done. (2) To describe another class of cases in which any operation, no matter how radical, will in a large majority of cases fail to give permanent relief; but, at the same time, to state his entire approbation of it in the hands of experts.

**Carcinoma of the Cervix Uteri.**—Dr. Thaddeus A. Reamy, of Cincinnati, Ohio, presented a paper on this subject. Among other things, he stated that spontaneous recovery from carcinoma did not occur. Unequivocal recovery lasting from ten to twenty-five years of two cases following removal of the diseased and adjacent tissues, proved the curability of carcinoma of the cervix and also its local origin. The author reported six cases of carcinoma of the cervix uteri. No. 1 was operated upon eighteen years ago, and is in good health to-day. No. 2 had gone nine years without recurrence of the disease. No. 3 fifteen years without recurrence. Twelve years had elapsed without recurrence in Case No. 4. In No. 5 eighteen years had elapsed since removal without recurrence, and No. 6 twelve years without recurrence.

**Primary Carcinoma of the Vulva.**—The author of this paper, Dr. Reuben Peterson, of Ann Arbor, Michigan, reported four cases of primary carcinoma of the vulva. He presented a résumé of the literature of the subject and the conclusions drawn therefrom. The cases were narrated in detail. He spoke of the frequency of the condition as compared with other carcinomatous states of the genital tract, and discussed at length the diagnosis and symptomatology. In considering the operative treatment he spoke of the advisability of removing the inguinal glands. If carcinoma of the vulva was seen and treated early enough, good results could be obtained. Veit quoted Schwartz as having ten permanent recoveries out of twenty-three cases. While this might be overstating the facts, it was unquestionably true that there was much more hope of cure in cases of carcinoma of the vulva after the radical operation than after the most radical operations for carcinoma of the uterus.

**Renal Decapsulation for Puerperal Eclampsia.**—Dr. George M. Edebohls, of New York, read a paper on this subject. Renal decapsulation for puerperal eclampsia of renal origin was the logical outcome of the encouraging results following the author's operation in cases of chronic Bright's disease. The author said he had successfully performed bilateral renal decapsulation for puerperal eclampsia upon a primipara two days after a forced delivery. The convulsions began before labor and continued to the time of operation, the patient having a convulsion while under chloroform on the operating table. This operation, performed on February 17, 1903, was believed to represent the first instance of renal decapsulation, or, for that matter, of any operation upon the kidney or kidneys, ever undertaken for the cure of puerperal convulsions. The favorable results, both immediate and remote, in this case, full details of which were given in the paper, at once assign a place to renal decapsulation as one of the resources at the command of the profession in the treatment of puerperal eclampsia. He said a woman, who was suffering from uremic convulsions, was entitled to the positive benefits of decapsulation, whether pregnant, in labor, or in the puerperium.

### THIRD DAY—MAY 14TH.

**Should the Uterus Be Removed When the Ovaries and Tubes Are Removed in Cases of Double Pyosalpinx, When Operating Either Through the Abdomen or the Vagina?**—Dr. Andrew F. Currier, of New York, in a contribution on this subject stated that if this was proposed as a matter of routine, the writer would reply emphatically, no. If it was proposed as an expedient, when the uterus itself was diseased, extensively diseased, he would say, yes. It might also be removed if it had been greatly injured in the extrication of the appendages, or if it should seem to be required as a means of controlling troublesome hemorrhage. To remove the uterus in a young woman might possibly produce unfavorable mental effect as a consequence, near or remote. To remove the uterus from one near, at, or past the menopause, might add an element of risk to the operation. To remove the uterus might weaken the pelvic roof, and might introduce an element of danger from enterocele. To remove the uterus unnecessarily was bad morally, for it tended to establish the impression of the unimportance of the organ, and that it might be unhesitatingly extirpated by any one who had the requisite skill. To remove the uterus on the ground that it might possibly be the seat of malignant disease in the future was assuming more than the clinical history taught in the great majority of cases, and was, moreover, a reproach to surgery, making it destructive instead of conservative.

Dr. Philander A. Harris, of Paterson, N. J., said that when suppuration had become well established in both tubes their exsection was the only operation which could be relied upon to effect a cure. By exsection was meant the removal of the lumen of the tube to the uterine mucosa. Less radical operations, as hemisection and disinfection of the ampullæ and larger portions of the tube, probing and washing of the tube and amputation of distal portions of pus tubes were incomplete operations, and were proportionately unsuccessful in that they left behind a diseased sinus, which not only continued to exist, but was productive of discomforts and other ill consequences to a greater or less extent. In bilateral exsection of double pyosalpinx sufficient ovarian stroma might be left to influence and continue menstruation in at least 95 per cent. of any large class of cases operated upon. The ovaries frequently participated in suppuration which they derived from pus tubes. But in them suppuration was more easily terminated and exsection was not advised excepting for extensive abscess of the ovary at the time the tubes were exsected, or a belief of knowledge that the suppuration in the ovary was tubercular in character. Simple excision of double pyosalpinx afforded the maximum degree of relief, with a minimum of mutilation, and interference with the functions of the pelvic organs. The complaints arising from the existence of endometritis often ceased after simple exsection of double pyosalpinx. If the symptoms of endometritis continued, and greatly harassed the patient, the uterus might be removed by vaginal section. The price of removal of the uterus in every case of double pyosalpinx might be partly estimated by the following results: (1) Loss of menstruation in every instance; (2) partial or complete extinction of the sexual quality in a large proportion of the cases, together with incomplete physical capacity for sexual participation; (3) injury to the nervous system of the patient, arising from her knowledge and appreciation that she had been prematurely and possibly unnecessarily deprived of these and other qualities which rendered her physically and, to a certain extent, morally inferior to other women.

Dr. I. S. Stone, of Washington, D. C., stated that no organ should be removed unless it was absolutely necessary. In a large majority of cases the pus found in diseased adnexa was sterile. It followed that the chief element of danger from sepsis, was eliminated, and the uterus was not the seat of dangerous microbic infection. The exception to the above rule might be found in puerperal infections. When purulent adnexa were removed the uterine cornua should be excised and the uterus permanently sealed, and thus made a barrier against further infection and also to permit effective treatment addressed to the uterine cavity if necessary. Hysterectomy required additional time, caused further traumatism, and necessitated changes in the anatomical relations of the vagina, bladder, etc. If necessary to drain the pelvis by way of the vagina, the usual route through the cul-de-sac posterior to the uterus answered every purpose. Finally, a number of women objected to panhysterectomy, and besides the question of its effect upon the mental status of the patient was *sub judice.*

Dr. Matthew D. Mann, of Buffalo, said (1) that the almost sole cause of pus tubes was gonorrhea, though there might be a mixed infection. (2) The uterus was usually infected and might make trouble afterwards and be the cause of spreading the infection. (3) The uterus was no longer of any use. (4) Menstruation did not always stop after the removal of the tubes and ovaries; and if it remained, it might become excessive and cause trouble. (5) It might become the seat of cancerous disease. (6) In acute infection the removal of the uterus afforded the best means of securing drainage. (7) The results by the vaginal route, where the uterus was always removed, warranted its removal by the abdominal route. (8) The woman's sexual life was unaffected by the removal of the uterus. (9) The additional time taken for its removal was more than counterbalanced by the securing of good drainage.

Dr. Charles P. Noble, of Philadelphia, Pa., said that of hysterectomy for circumscribed pus limited to the uterine appendages, that is, pyosalpinx or abscess of the ovary, he had had 58 cases, one death, a mortality of 1.7 per cent. Of hysterectomy for intraperitoneal abscess in addition to pus in the uterine appendages, he had had 6 cases, 4 deaths, a mortality of 66⅔ per cent. Of appendages removed for circumscribed pus contained in the tube or ovary, that is, pyosalpinx or abscess of the ovary, 76 cases, 7 deaths, a mortality of 9.2 per cent. Of appendages removed for circumscribed pus contained in a tube or ovary since January 1, 1895, 36 cases, 2 deaths, mortality 5.5 per cent. Of appendages removed for intraperitoneal abscess in addition to pus in ovary and tube, 22 cases, 5 deaths, mortality 22.7 per cent. Incision and drainage for pelvic suppuration, 58 cases, 1 death, mortality 1.7 per cent.

**Ureterocystotomy.**—Dr. J. Wesley Bovée, of Washington, D. C., narrated the history of this operation, pointed out the indications, discussed the diagnosis routes and methods of operation, complications, technic, after treatment, detailed histories of cases, and gave the results.

**Note on the Occurrence of Gall-stones in Insane Women.**—Dr. Walter P. Manton, of Detroit, Mich., read a paper on this subject. He stated that cholelithiasis was of frequent occurrence among insane women, but that symptoms were usually wanting, so that statistics must be obtained solely from autopsy findings. From his experience at the Eastern Michigan Asylum he found that gall-stones were present in rather more than 26 per cent. of the patients dying at that institution in whom the abdominal contents was examined. The paper was intended only as a small contribution to the knowledge of the subject, and as preliminary to more extensive discussion of gall-stones in insane women at some future time.

**Excision of the Proximal Ends of the Fallopian Tubes at Their Origin in the Uterus, the Operation of Choice, for the Extremely Rare Cases Wherein Sterility Is Desirable.**—Dr. Philander A. Harris, of Paterson, N. J., contributed a paper with this title.

The object of this operation was to take the place of the Porro operation; to take the place of bilateral removal of the ovaries; to take the place of bilateral excision of healthy tubes. Menstruation would not be sacrificed. Every advantage arising from retention of the ovaries would be preserved to the individual, excepting the single item of impregnation. Tubes thus disconnected from the uterus would probably remain immune from future gonorrheal infection of the endometrium. A patient thus sterilized could doubtless be cured of her sterility by implantation of the tubes through the uterine cornua to the uterine cavity. While there were doubtless cases which were characterized by certain conditions of the body, mind or nervous system calling for the voluntary production of sterility, there must necessarily be a very limited field for the employment of this operation. If a case was to be surgically sterilized, it should be effected in such manner that the patient and her friends might feel that she can be restored to fertility, should the pathological factors of her case so abate or disappear as to render impregnation and pregnancy permissible.

**Personal Experience in Operations Upon Diabetic Patients.**—Dr. Charles P. Noble, of Philadelphia, in discussing this topic, said that of the seven patients operated upon by himself, six made good recoveries, and one died of diabetic coma. In the six remaining cases the healing of the wounds and the general progress of the patients toward recovery was not different from that in patients not the subject of glycosuria. In looking up the literature of the subject he had been able to add to his own list sixty-two cases of operations upon diabetics, upon those organs of the body which were the special field of the gynecologist and abdominal surgeon, making a total of sixty-nine cases. The contraindication to operation was strongest in those patients suffering markedly from the constitutional symptoms of diabetes—poor nutrition, wasting, intense thirst, and morbid appetite.

**Officers for the Ensuing Year.**—The following officers were elected: President, Dr. Edward Reynolds, of Boston, Mass.; First Vice-President, Dr. Whitridge Williams, of Baltimore, Md.; Second Vice-President, Dr. Edward P. Davis, of Philadelphia, Pa.; Secretary, Dr. J. Riddle Goffe, of New York City, re-elected; Treasurer, Dr. J. Montgomery Baldy, of Philadelphia, Pa., re-elected. Place of meeting, Boston, Mass., fourth Tuesday in May, 1904.

## BOOK REVIEWS.

BOOK ON THE PHYSICIAN HIMSELF, AND THINGS THAT CONCERN HIS REPUTATION AND SUCCESS. By D. W. CATHELL, M.D. The Twentieth Century Edition, being the eleventh edition revised and enlarged by the author and his son, WM. T. CATHELL, Baltimore, Md. F. A. Davis Co., Philadelphia.

THIS book is dedicated to the younger members of the medical profession and also the older ones, who have paused at less than the average degree of success in life. We might wish that the curricula of our colleges in medicine would include among the studies of the third or fourth year this manual on the physician himself.

There are so few of us who, when we enter into the practice of medicine, know more than the mere outlines of gentlemanly conduct to guide us in a relation which will mean so much to our future success. True it is that there are a few fortunate ones who have the privilege of assisting some older physician, and by means of his experience and counsel achieve a stature of policy and address as well as a prestige in the eyes of their client which is invaluable. For the major part, however, some such work as this should be thoroughly known.

This work has been before the profession so long that it is unnecessary to outline its chief features. Thus, it might be said that it is full of good advice about the little things that, if neglected, lead to discomfort if not disaster.

We are inclined to believe that the author's dedication in which he regards the personal side of the physician's life as the lesser one, in reality the greater, because there is so much hard, hard work in the actual practice of medicine that the study of the scientific side is really almost play.

THE DEVELOPMENT OF THE HUMAN BODY. By J. D. MCMURRICH, A.M., Ph.D., Professor of Anatomy in the University of Michigan. P. Blakiston's Son & Co., Philadelphia.

WHILE there is no doubt that a careful study of the origin and development of the organs of the human body makes a most satisfactory and thorough ground work for the study of histology and anatomy, their extensive adoption in the courses of study of the medical colleges of this country has never taken place. This we believe is due largely to the fact that satisfactory manuals have not been to hand. The manuals which have been presented have either been too fragmentary or too detailed, but in the present instance we believe that a happy medium has been struck. This book is some 500 pages in length and, although fairly extensive, by means of a good-sized type and a large number of illustrations, the information conveyed is not too excessive in amount and above all is well digested. We can most heartily commend the volume to the students of medicine and to graduates who desire to refresh their memories on questions of development.

BIOGRAPHIC CLINICS. The origin of the ill health of De Quincey, Carlyle, Darwin, Huxley and Browning. By GEO. M. GOULD, M.D. P. Blakiston's Son & Co., Philadelphia.

THIS is a very interesting book, which may be read to while away a tedious half hour and to come away with the idea that in this day and generation special pleading in medicine is not dead. As is well known, the author makes a brief that the disorders of these celebrated men was due to eye-strain. In our opinion a most fantastic and foolish hypothesis, but knowing that it is not impossible for anyone to see the things that they wish to see, we can forgive the gifted author for leaning so strongly on his specialty.

PROGRESSIVE MEDICINE. Vol. 1. March, 1903. Lea Brothers & Co., New York and Philadelphia.

THE present number of Progressive Medicine contains summaries in six branches of the medical sciences. Surgery of the head, neck and chest is treated by Dr. C. H. Frazier; infectious diseases by J. B. Herrick; diseases of children by F. M. Crandall; pathology by L. Hektoen; laryngology and rhinology by A. L. Turner, and otology by R. L. Randolph.

The general scope of the reviews is much similar to that followed in previous issues of Progressive Medicine and the same attention to careful compression is manifest throughout. In the chapter on pathology the newer work of the studies in immunity are very carefully considered, making this by far the best presentation of this difficult subject now obtainable. The volume throughout is the best of its kind, and shows once more that an abstract journal can be made of high value, if carefully and conscientiously edited.

THE MEDICAL NEWS.
A WEEKLY JOURNAL OF MEDICAL SCIENCE.

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## ORIGINAL ARTICLES.

### THE SURGERY OF THE SIMPLE DISEASES OF THE STOMACH.*

BY B. G. A. MOYNIHAN, F.R.C.S.,
OF LEEDS, ENGLAND.

MAY I be permitted at the outset of my paper to express my most cordial thanks to the Fellows of the American Surgical Association for the signal honor which has been conferred upon me in asking me to present a paper to this meeting? There are few incidents so grateful to a surgeon, there can be none more encouraging, than a recognition from those best qualified to judge of the work which he is striving to do. My earnest hope is that my contribution to your proceedings may in some small measure repay you for the great courtesy which you have shown to me to-day.

I propose to deal in my paper with the surgery of the simple, that is, the non-malignant, diseases of the stomach. The subject, I am well aware, is one that has been debated at previous meetings of this association, but you will, I think, agree that there is still much that has to be learnt, there is still much that may engage us in profitable discussion, and I do not think, therefore, that any apology is needed for this choice of a subject.

The great majority of the simple diseases of the stomach which can be successfully treated by surgical measures are due to ulceration or to its complications and results. These various conditions can be dealt with in the following order: (1) perforation of gastric or duodenal ulcers; (2) hemorrhage from gastric or duodenal ulcers; (3) chronic ulcer, its various clinical types; (4) hour-glass stomach.

*Perforation of Gastric or Duodenal Ulcers.*—The perforation of gastric or duodenal ulcer is one of the most serious and most overwhelming catastrophies that can befall a human being. The onset of the symptoms is sudden, the course rapid, and unless surgical measures are adopted early, the disease hastens to a fatal ending in almost every instance.

Perforation of the stomach is usually described as being of two varieties *acute* and *chronic;* but there is an intermediate class of case, not embraced by either of these terms, which is best described as *subacute.*

*In acute perforation* the ulcer gives way suddenly and completely. A larger or smaller hole results, and through this the stomach contents are free to escape at once into the general cavity of the peritoneum.

*In subacute perforation* the ulcer probably gives way almost as quickly as in the acute form, but owing to the small size of the ulcer, or to the emptiness of the stomach, or to the instant plugging of the opening by an omental flap or tag, or to the speedy formation of lymph which forms, as it were, a cork or lid for the ulcer, the escape of fluid from the stomach is small in quantity and the damage inflicted thereby is less considerable. The symptoms at their onset may be as grave as those in acute perforation, but on opening the abdomen the ulcer may be seen to be sealed over.

In the subacute form of perforation I have found that there is always a complaint of greater discomfort for several days preceding the rupture. Vague general, or localized pains have been felt in the abdomen, or a sharp spasm or "stitch" when the patient turned quickly, or attempted to laugh. One girl, a housemaid, felt the pain down her left side especially when reaching up to her work; another said it hurt her to bend, as her side felt stiff. These premonitory symptoms are important, and if recognized they should enable us to take measures to prevent the occurrence of perforation. They doubtless have their origin in a localized peritonitis, and the stiffness is due to the unconscious protection of an inflamed area by a muscular splint.

*In chronic perforation,* the ulcer has slowly eaten its way through the stomach coats, and a protective peritonitis has had time to develop at the base. The escape of stomach contents is therefore local merely; barriers of lymph confine the fluid to a restricted area and perigastric abscess forms. A chronic perforation occurs more frequently on the posterior surface of the stomach, and the perigastric abscess occasioned thereby is recognized as "subphrenic." The acute and subacute forms of perforating ulcer are more common on the anterior surface.

There can be no doubt that recovery by medical treatment alone is possible both in the acute and in the subacute forms of perforation. I have had two cases under my care, in which a diagnosis of perforation had been made by competent medical men. In both, an operation was impossible as no skilled help was available until the urgency of the symptoms seemed to have passed off. When I operated many months later, the evidence of peritonitis completely surrounding the stomach were undeniable. Though patients may recover, their recovery cannot be urged as a reason for the delay or withholding of surgical help in all cases. For the possibility of spontaneous recovery, though not denied, is yet so remote as to make it imperative to adopt operative treatment at the earliest possible moment. The risk of operation is definite, the hazard of delay is immeasurable. There are times when the diagnosis may be difficult. If morphine has been administered to still the intolerable pain, the patient's condition becomes placid and comfortable. It may be almost impossible then to recognize the extreme urgency of the case. In such circumstances I have, however, placed great reliance upon a continued hardness and rigidity of the abdominal muscles. Even when the patient expresses herself as free from pain, when the aspect has become natural, and when the pulse has returned to the normal, the abdominal rigidity remains. In the case of I. S., a girl aged seventeen, upon whom I operated for a perforated duodenal ulcer, the medical man who sent her to the infirmary had diagnosed a perforated gastric ulcer, and had told the patient and her parents that immediate operation alone could save her life. Having obtained consent to operation, he despatched the girl to the infirmary and gave a hypodermic injection of ¼ gr. morphine to lessen the distress of the journey. When I saw her shortly after her arrival, she looked in perfect health, she had no suffering, and her pulse and respirations were normal. The abdomen though not distended was absolutely rigid and immobile, and I did not hesitate to operate at once. In any uncertain case I should incline to operation rather than to indefinite postponement to solve the diagnosis.

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* Read at Annual Meeting of American Surgical Association, May 10, 1903. By courtesy of the Boston Medical and Surgical Journal.

I have seen a difficulty in diagnosis arise, and I know of three cases in which negative exploration has been performed, when the patient was a woman at the commencement of a menstrual period. From some unexplained and indeterminate cause a sharp attack of abdominal pain, followed by vomiting, distention, prostration and collapse had occurred in all, and had caused a confusion in the diagnosis. In the case under my own observation a history of previous similar, though less severe, attacks at the menstrual epoch, and the absence of any marked abdominal stiffness or tenderness, though the belly was obviously distended, enabled me to negative the question of perforating ulcer of the stomach.

The operation should be conducted speedily, and all means adopted to save the patient from shock. The excision of the ulcer is not necessary. My practice is to close the ulcer at once by a single catgut suture taken through from side to side, so as to prevent any further leakage during the application of the sutures. I apply two continuous sutures of Pagenstecher thread, which infold the ulcer and a portion of healthy stomach around it. After the stitches are completed, the cleansing of the peritoneum is begun. If there is much soiling a free flushing of the cavity is necessary; if the operation is done within ten to twelve hours a gentle wiping of the surrounding area with wet swabs will suffice. Drainage, as a rule, is not necessary, except in the very late cases, but when adopted it should be free and, if necessary, a second suprapubic incision should be made. I have preferred the enlarging of the original incision and free flushing through that, to the method of multiple incisions advocated by Finney. One point I think requires emphasis: it is the multiplicity of perforating ulcers. As soon as the ulcer first discovered is sutured a rapid survey of the whole stomach is desirable, in order that any other ulcer may be laid bare. An examination of a large number of recorded cases has shown that double perforation occurs in no less than 20 per cent. In the majority the second ulcer was on the posterior surface at a point exactly apposed to the first. In duodenal ulceration the perforation may be very large; the ulcer seems to have fallen out bodily. When the gap is stitched up a narrowing of the caliber of the duodenum results, and it may therefore be necessary to give an alternative route from the stomach by performing gastro-enterostomy.

*Hemorrhage.*—The bleeding from gastric or duodenal ulcers is recognizable either as hematemesis or melena. In lesser degree these symptoms are seen not infrequently; in their severer forms they are of dire significance, and may be the sole cause of the patient's death. It is but rarely that the surgeon is called upon for so momentous a judgment as is necessary in cases of severe hematemesis or severe melena. For the condition of the patient is poor, even at times, desperate. Operative intervention is therefore hazardous; yet a continued bleeding will, in certain cases, inevitably end in death.

It is necessary at the outset to emphasize the fact, a fact frequently ignored, that hemorrhage may manifest itself under entirely different circumstances in different patients. In some it is the earliest and for a time the only symptom of gastric disturbance; in others it is the last expression in a long and tedious course of symptoms. In other words, the hemorrhage may occur from an *acute* or from a *chronic ulcer* of the stomach or duodenum. It will be found when the clinical history of a series of cases is examined, that whereas in the latter the bleeding varies within the widest limits both as regards quantity and frequency, in the former the clinical history is repeated in case after case in a most remarkable manner.

*Hemorrhage from an Acute Ulcer.*—Under the term *acute ulcer* of the stomach, are probably included several varieties of pathological conditions, which are different in causation, different in destiny, but alike in the single fact that their clinical recognition is due to the bleeding which occurs from them, in abundant quantity. There is the ordinary peptic ulcer, there is the minute erosion barely recognizable even on close scrutiny, which yet opens up a vessel, and there are "weeping patches" and "villous areas" and similar indeterminate and unnumbered conditions which have been recognized when the stomach has been explored during life. To the clinician all these conditions are betrayed by their tendency to hemorrhage.

In almost every instance the hemorrhage is the first symptom. Even on close inquiry it is difficult to elicit any history of antecedent gastric discomforts. The vomiting of blood comes unexpectedly and suddenly, a large quantity of blood is lost and the patient suffers, often in an extreme degree, from the symptoms of hemorrhage. The pulse becomes feeble and fluttering, the face waxen, the breathing rapid and shallow, the body surface cold or clammy. For a time the symptoms may give rise to serious alarm, but a rally is seldom long delayed. The bleeding is checked spontaneously, and vomiting is rarely repeated, or if repeated the quantity of blood lost is but small.

In several of my cases a sudden, apparently causeless hemorrhage, has ushered in a long train of symptoms of dyspepsia. The acute ulcer has been the precurser, or, rather the earliest stage, of a chronic ulcer.

The characteristics of hemorrhage from an acute gastric ulcer are, therefore: *Spontaneity, abruptness of onset, the rapid loss of a large quantity of blood, the marked tendency to spontaneous cessation, the infrequency of a repetition of the hemorrhage in anything but trivial quantity, and the transience of the resulting anemia.*

*Hemorrhage from a Chronic Ulcer.*—The bleeding from a chronic ulcer of the stomach or duodenum may vary within the widest limits both of frequency and of quantity. For convenience of description I should arrange the cases in four groups:

(1) In the first the hemorrhages are latent or concealed. The blood is small in quantity, and may be recognized only after minute examination of the stomach contents or of the feces. The estimates given by various writers, as to the occurrence of hemorrhage in ulcer, vary between 20 and 80 per cent., and we are entitled to assume that this wide divergence of statement is due not so much to differences in the symptoms of ulcer but rather to the varying degrees of closeness with which the cases are observed, and to differences in the frequency and minuteness of examinations of the stomach contents of the feces. It would probably not be rash to assume that all ulcers of the stomach or duodenum bleed at some time or other, but if the bleeding be trivial and infrequently repeated, it is never likely to obtain clinical recognition.

(2) In the second group those cases should be included which are characterized by intermittent hemorrhage. The bleeding is copious but transient, and occurs at intervals of two, three or more months. An exemplary instance of this class is the following:

A. S., female; aged twenty-eight years. In May, 1898, the patient had a sudden attack of profuse bleeding from the stomach. She was in bed six weeks. For eighteen months after this her health was very poor, indigestion was constant, vomiting was occasional, constipation was invariable. For six months she was then in fairly good health, and was able to take food much better. In April, 1900, indigestion became severe, and a copious hemorrhage again occurred. Treatment was continued for six months with much benefit. In January, 1902, a third attack of hematemesis and fainting; after this she was kept in bed for four weeks. In September, 1902, again hematemesis as severe as before. From then to January, 1903, she was under constant treatment, but improvement was very slow. Anemia has been a prominent symptom since April, 1900. At the operation a large ulcer was found in the stomach, and a second in the duodenum. Gastro-enterostomy was successfully performed.

In all the cases in this group indigestion is a prominent symptom. The hemorrhage often occurs without cause, but at times there may have been noticed an exacerbation of gastric discomfort and uneasiness for a few days. Anemia is almost constant.

(3) In the third group the cases are characterized by hemorrhages, which are rapidly repeated, and on all occasions abundant. In the majority of patients the symptoms of indigestion which have been noticed for months or years before have undergone an appreciable increase in the recent days. Then, suddenly, the hemorrhage occurs, a large quantity, a pint or a pint and a half of blood is vomited. The patient may faint from loss of blood; he shows, always, the general symptoms of bleeding. For twelve or twenty-four hours the vomiting ceases; to reappear at the end of this time, without apparent cause, and in equal or greater quantity. A second latent period is followed by a further hemorrhage, and so the patient becomes in a condition of the gravest peril.

No better example of this class could be cited than the following: M. W., female; aged twenty-four years. Has suffered from symptoms of gastric ulcer, pain, vomiting and inability to take solid food for fifteen months. Eleven weeks before admission to hospital all her symptoms became worse. Vomiting became frequent; pain was almost intolerable. During the five weeks before admission she vomited daily, and on almost all occasions some blood came. While waiting in the hospital she vomited three times in five days, and on each occasion about half a pint of blood came. She was very blanched. Pulse 112. The motions were tarry on two occasions. At the operation two old scars and one showing recent inflammation were seen. Gastro-enterostomy led to perfect recovery.

(4) The fourth group would comprise those cases in which the hemorrhage occurs in enormous quantity, inundating the patient and leading to almost instant death. The opening of a splenic artery, the aorta, the vena cava, or the pancreaticoduodenal vessels, allows of the so rapid escape of blood that the patient dies as surely and as swiftly as if his carotid or femoral vessels were divided. Such cases fortunately are rare. In my own experience only one such example has occurred; a large oval opening being then found in the splenic artery.

If, then, we accept the classification of cases of hemorrhage from gastric or duodenal ulcer into the four groups suggested, we may define their characteristics as follows:

(1) The hemorrhage is latent or concealed, is always trivial and often conspicuous.

(2) The hemorrhage is intermittent, but in moderate quantity, occurring spontaneously and with apparent caprice at infrequent intervals. The

life of the patient is never in jeopardy from loss of blood, though anemia is a persisting symptom.

(3) The hemorrhage occurs generally but not always after a warning exacerbation of chronic symptoms. It is rapidly repeated, is always abundant, its persistence and excess cause grave peril, and will, if unchecked, be the determining cause of the patient's death.

(4) The hemorrhage is instant, overwhelming and lethal.

*The Treatment of Hemorrhage.*—(*a*) *From an Acute Ulcer.*—If what has been said of the characteristics of hemorrhage from an acute ulcer prove to be true, it is clear that the aid of the surgeon will rarely need to be invoked. Medical means alone will suffice in almost every instance to ensure the recovery of the patient. Though the hemorrhage is alarming from its suddenness and intensity, it may confidently be predicted that, in the majority of cases, it will not recur; or that if it recur, the quantity lost will almost certainly be small.

There are, however, a few cases in which the hemorrhage may be both copious and recurring, and may threaten the life of the patient. Under such circumstances an operation may be required. An examination of the recorded cases has convinced me that wherever surgical treatment is deemed advisable gastro-enterostomy, speedily performed, will prove the surest means of leading to the arrest of the bleeding. In not a few records one reads that the whole surface of the mucosa seemed to be "weeping blood," that multiple points of oozing appeared scattered irregularly over the stomach wall, or that a definite source of the blood, any point from which the blood chiefly ran, could not be ascertained. The surgeon has then fallen back upon styptics or the cautery, or the ligaturing of a villous patch in mass. It is difficult to convince one's self that any of these procedures have had the smallest effect for good; and in some the bleeding has recurred after the operation, and has determined the fatal issue. A search for a bleeding point is futile, harmful and, in my judgment, quite unnecessary. The performance of gastro-enterostomy will prove more effective than any other procedure, both in checking the hemorrhage and in preventing its recurrence.

(*b*) *From a Chronic Ulcer.*—It is mainly in regard to the cases included in Group 3 of the classification given above that the question of surgical treatment will arise. If we picture to ourselves the pathological conditions present in such a case, it will be seen that, though the bleeding may be spontaneously checked for a time, it will show a marked tendency to recur. The base of the ulcer is, as a rule, densely hard, and the vessel traverses it like a rigid pipe. The vessel is eaten into, as it were, by the ulcer, which erodes one side, leaving a ragged hole. Owing to the stiffening by chronic inflammatory deposit, the artery is unable to contract or retract, and the bleeding can, therefore, only be checked by the plugging of the opening by a thrombus. That such a plugging does occur there can be no doubt, for in one case I have seen it during life; on gently detaching the clot the bleeding began at once with furious onset. The tendency, indeed, even in a chronic ulcer such as I have depicted, must be to spontaneous cessation, for in no other way can the stopping and recurrence of bleeding, constantly seen, be explained. There is some condition as yet uncertain which is responsible for the detaching of the plug. This condition, I venture to think, is distention of the stomach, whereby the base of the ulcer is stretched and the clot disturbed; for my record of cases shows indisputably that a gastro-enterostomy performed upon a patient suffering from this form of bleeding suffices to check the tendency to further hemorrhage, and permits of the speedy healing of the ulcer. In all patients so suffering a prolonged search for the ulcer in the stomach is injudicious, and the ulcer when found may, as the result of firm fusion with an adjacent structure, be irremovable. In two cases I have excised the ulcer; in the first the ulcer was on the posterior surface of the stomach, and to the opening left by its removal I anastomosed a loop of the jejunum; in the second the ulcer lay on the anterior surface near the lesser curvature towards the cardia. In this I did not perform gastro-enterostomy. In all the other cases that I have operated upon, I have not attempted to deal directly with the ulcer, but have hastened to perform gastro-enterostomy. Of all the patients, the one upon whom I did not perform a gastro-enterostomy was the only one I lost; the others recovered speedily and without further sign of hemorrhage.

In some cases an examination of the stomach may reveal two chronic ulcers or more, from each one of which the blood may be coming. To deal with each would be inadvisable or impossible. Cases, moreover, are recorded in which after an ulcer had been excised or ligatured in mass the bleeding had recurred and proved fatal.

In all cases, therefore, of hemorrhage from a chronic ulcer, an operation ought to be performed at the earliest possible moment. Search for, and local treatment of, the ulcer or ulcers are not necessary. A gastro-enterostomy will, without doubt, prevent a recurrence of hemorrhage and lead to a rapid healing of the ulcer from which the blood has come.

The suggestion of Dr. W. L. Rodman that the ulcer-bearing area of the stomach should be removed by partial gastrectomy is one that merits, and will doubtless receive, the careful and favorable consideration of surgeons.

*Chronic Ulcer.*—Chronic ulcer of the stomach may present itself clinically in a great diversity of form. In some the onset is brusque, a copious hemorrhage from an acute ulcer being the first manifestation of gastric disease; after the lapse of a few days or weeks, however, gastralgia, vomiting and other symptoms appear, and the chronic ulcer is established. In others the onset is latent, and the early symptoms subdued. A patient may say that for several months a trivial, vague uneasiness has been experienced, that would have been forgotten but for the later accession of severer symptoms. In still others the course of the disease may present very remarkable intermissions. For several weeks the symptoms may be most marked and disabling, hemorrhage may occur on one or more occasions, but gradually an improvement is observed, and, after a time, all the distress may rapidly subside, leaving the patient in good health. The appetite may be restored, and the body weight may increase by a stone or even more. After a few months' interval a recurrence of the symptoms is observed, all the details of the former illness are repeated and fresh hemorrhage may occur. And so the history may be repeated. In these circumstances the symptoms are due perhaps to the breaking down in the scar of a solitary ulcer, or to the fresh outbreak of ulcerated patches in other parts of the organ; of the two possibilities the former is probably the more frequent.

I have no doubt that many patients who have died from supposed malignant disease of the stomach have suffered from nothing but chronic ulceration. The induration which a persisting ulceration may cause is remarkable both for its extent and for its extraordinary mimicry of the appearances of malignant disease. In some of my own cases, and especially in one case of hour-glass stomach, the mass of inflammatory tissue was, with the knowledge I then possessed, absolutely indistinguishable by inspection and palpation from a malignant growth. Recently, however, I have in doubtful cases been able, I think, to distinguish chronic inflammatory masses by their perfect smoothness of surface. A malignant growth is always irregular, knotted, modular or "gritty" on the surface; an inflammatory mass is more smoothly rounded off, and there is often a milky opacity of the peritoneum. The frequency with which carcinoma will develop in chronic ulcer is now generally acknowledged. Hauser estimates the frequency at 6 per cent., a proportion which seems to me to be in excess of the truth. In my own experience only one case has been recognized.

The pathological conditions caused by chronic ulceration in the stomach are of great variety. When marked cicatricial contraction occurs the viscus is narrowed at the site of the ulcer, and an hour-glass stomach, or a trifid stomach, or a dilated stomach due to pyloric or duodenal stenosis results. If the ulcer slowly deepens a perigastritis is produced, and the stomach may become anchylosed to the abdominal wall, or the pancreas, or the liver, or any other neighboring structure. In all these conditions, and in others where no warping of the stomach can be found, an inveterate dyspepsia is a common symptom.

It has been the immemorial custom to look upon dyspepsia as due, chiefly, if not solely, to deficiency in the quantity or quality of the gastric juice, to some lack of adequate power in the stomach as a secreting organ. But dyspepsia of the intractable, constantly recurring form is more often a matter of physics than of chemistry. In several cases, as my records will show, I have operated for no other symptom than intolerable dyspepsia, when no diagnosis of pyloric obstruction, hour-glass stomach, or rather mechanical deviation from the normal could be made. Yet at the operation abundant proof has been obtained that there was obvious distortion, or puckering or adhesion at one part or another of the organ; and that the stomach was crippled in the freedom of its action by these after effects of ulceration. One observation I have repeatedly made in operating upon cases of chronic gastric and duodenal ulcers is that such ulcers are often multiple. If a well-marked ulcer is found at, say, the pyloric end of the stomach on the anterior surface, a second ulcer may be found, perhaps at an exactly apposing point in the posterior surface, perhaps elsewhere in the stomach. Chronic gastric ulcers are in my experience rarely solitary.

The indications for operation in chronic ulcer of the stomach are of widely different character. When the ulcer is near the pylorus a dilated stomach will probably be the chief clinical sign; when the ulcer is in the body an hour-glass stomach may be caused; when the ulcer is nearer the cardiac end gastralgia and dyspepsia may be the only indications.

The evidences of old ulceration in the stomach are at times difficult to discover. A thin fibrous adhesion, a little crumpling of the surface, or a whitish blot on the serous coat may be all that is left of a patch of ulceration. When the stomach is pinched up between the fingers a little local thickening may be felt, or the mucous membrane may not, as it should, roll away from the muscular coat on gentle pressure. If in performing gastro-enterostomy the needle has to be passed through the stomach wall at the margin of an old ulcer, the different and greatly increased resistance to its passage is ample evidence of the change that has taken place. Inveterate dyspepsia, is, in itself, an ample warrant for surgical treatment. Cases are within the experience of all in which prolonged medical treatment, most thoroughly and carefully supervised, proves ineffective, or if temporarily beneficial, is powerless to ward off the recurrence of dyspepsia. In such cases be the physical signs what they may, an operation is desirable, and in my experience abundant justification for it will almost always be found when the stomach comes to be examined.

There are few beings so abjectly miserable as those who are the victims of intractable dyspepsia. The meal time which should be a delight is a time of despair and foreboding. The keen relish of good food, which the man in physical health should appreciate, is a joy unknown or long forgotten to the dyspeptic. A patient who has misery written in every wrinkle of a thin and haggard face, who by reason of long suffering and bitter experience has felt compelled to abandon first one dish and then another, till fluids alone can be taken, and these not always with impunity, a patient, to say the truth, whose whole life becomes embittered by the pangs of a suffering which he must inflict upon himself, this patient will find if a gastro-enterostomy be done for the chronic ulcer, which is the source of all his trouble, that his return to health and appetite is at first almost beyond belief.

Not a few of the patients upon whom I have operated have almost declined at the first to take the solid food, vegetables, puddings, pastry, and so forth that I have ordered them. And when the meal has been taken haltingly, and with grave doubt, a genuine surprise is expressed that no disablement has followed. Indeed, I do not know any operation in surgery which gives better results, which gives more complete satisfaction both to the patient and to his surgeon than gastro-enterostomy for chronic ulcer of the stomach.

*Operative Treatment.*—In operating upon chronic ulcer of the stomach I always perform gastro-enterostomy. It matters not where the ulcer is placed, a gastro-enterostomy will relieve the symptoms completely and permanently, and will permit of the sound healing of the ulcer. This fact, I submit, is placed beyond dispute by the series of cases I am able to record.

At first sight it might appear desirable on all occasions or at all times when possible to excise the ulcer. Such a course is entirely unnecessary; moreover it is futile. For I have already pointed out that gastric ulcer is rarely solitary. If, therefore, two ulcers are found, or more than two, it is not always possible to say, even by close examination, which of the two is chiefly at fault. To excise all the ulcers, for I have seen a stomach so scarred that the ulcers seemed universal, is quite out of the question unless a partial gastrectomy is performed. But if the chief offending ulcer be excised, gastro-enterostomy would still, in my judgment, be necessary, for among the cases of excision of ulcer which are recorded there is not infrequent mention of little or no permanent improvement. In all cases, therefore, I submit gastro-enterostomy, and gastro-enterostomy alone should be performed. Excision is unnecessary, often impossible, always insufficient; and is therefore not to be commended.

On three occasions I have performed pyloroplasty. The operation is one which, both from its ingenuity and its immediate success, appeals strongly to the surgeon. It is, however, unreliable, a return of the symptoms being not seldom observed. Of my three patients one remains perfectly well, the second is better but is certainly not in such good health as the average case of gastro-enterostomy, the third showed a speedy return of all the symptoms, and I then performed gastro-enterostomy with a perfectly satisfactory result. In this last case, and in others which I have seen, the return of the symptoms seemed to be due in part to a narrowing at the site of the pyloroplasty and in part to the formation of widespread and tough adhesions around the pyloric portion of the stomach, adhesion which must have seriously hampered the stomach in its freedom of action. Pyloroplasty is, in my judgment, an uncertain operation and its results cannot compare with those seen after the operation of gastro-enterostomy.

In the performance of gastro-enterostomy I have made the anastomosis on the anterior and on the posterior surface, and I have used the Murphy button and Laplace's forceps as aids to the operation. I wish to speak gratefully of the help I have received from these instruments, but the greatest service they have rendered me is to convince me that they are entirely unnecessary. No better anastomosis is possible than that made with the simple suture, none is so safe, none so adaptable, and so far as speed is concerned I am content to abide the decision of the timekeeper. With the simple suture a gastro-enterostomy rarely takes, from the beginning of the incision to the last stitch, more than thirty minutes, and I have once completed the operation in seventeen minutes. I mention these times because I think the question of pace important. Speed is essential, haste is often disastrous; the two should be distinguished. Speed should be the achievement, not the aim, of an operator. His work must be thoroughly done, but being so done, then the quicker it is done the better. I maintain that no time is saved by any mechanical appliance, and the operation is, with their aid, less perfect than it should be. I know the view which is held as to the worth of the Murphy button in America, and I have nothing but praise for the great ingenuity displayed in its making. But not the most ardent partisan will say that the Murphy button *never* courts disaster. I have seen two patients operated upon for intestinal obstruction caused by a Murphy button used for gastro-enterostomy—in one case the button had remained for six years. I have, myself, lost one patient from perforation of a button used in the performance of ileo-sigmoidostomy, three weeks after the operation. Now by the method of suture which I adopt for all forms of intestinal and gastric anastomoses there is no possibility—I speak positively—of present failure or of future mechanical disaster. The suture line has not leaked in one of my cases; the anastomosis is perfection. In one case of ileo-sigmoidostomy performed in acute obstruction due to cancer in the splenic flexure, the patient died at the end of twenty-three and a half hours. The anastomotic line was closed with the most minute perfection. I claim for the method that it is simple, speedy, applicable to all forms of anastomosis (and therefore time-saving in each, for the operator is quicker in a method he knows well), and is not open to the objection that future troubles are at least possible.

The following are the steps of the operation of gastro-enterostomy: The abdomen is opened to the right of the middle line and the fibers of the rectus are split. On opening the peritoneum a complete examination of the whole stomach and duodenum is made. The importance of this cannot be over-emphasized. A constriction in the body or toward the cardiac end may be most readily overlooked when, as is not uncommonly the case, a marked constriction at the pylorus, seen at once, is ample to account for all the symptoms. Cases of hour-glass stomach which have been overlooked at the operation, and a futile anastomosis made between the pyloric pouch and the jejunum, are recorded by several distinguished operators, and the mistake is an easy one to make unless one is determined to examine the whole of the stomach in every case. The importance of this examination of the whole stomach has recently received additional emphasis from the observation of a case upon which I operated a few months ago. I had diagnosed hour-glass stomach, and on opening the abdomen a perfect bilocular stomach at once was exposed. After demonstrating this I remarked that I always liked to see quite up to the cardiac before beginning my operation, and proceeding in the examination there was revealed another constriction and another loculus. There were, in fact, two constrictions and three loculi in the stomach—a trifid stomach. As soon as the operator is satisfied as to the conditions which exist, the great omentum and transverse colon are lifted out of the abdomen and turned upwards over the epigastrium. The under surface of the transverse mesocolon is exposed, and the vascular arch formed mainly by the middle colic artery is seen. A bloodless spot is chosen, a small incision made in the mesocolon, and the finger passed into the lesser sac. The opening in the mesocolon is then gradually enlarged by stretching and tearing until all the fingers can be passed through it. It is very rarely necessary to ligature any vessel. The hand of an assistant now makes the posterior surface of the stomach present at this opening, and the surgeon grasps the stomach and pulls it well through. A fold of the stomach, about three inches in length, is now seized with a Doyen's clamp. The clamp is applied in such a way that the portion of the stomach embraced by it extends from the greater curvature obliquely upwards to the lesser curvature and towards the cardiac. The duodeno-jejunal angle is now sought and readily found by sweeping the finger along the under surface of the root of the transverse mesocolon to the left of the spine. The jejunum is then brought to the surface and a portion of it, about nine inches from the angle, is clamped in a second pair of Doyen's forceps. The two clamps now lie side by side on the abdominal wall, and the portions of stomach and jejunum to be anastomosed are well outside the abdomen embraced by the clamps. The whole operation area is now covered with gauze wrung out of hot sterile salt solution, the clamps alone remaining visible. A continuous suture is then introduced, uniting the serous and subserous coats of the stomach and jejunum. The stitch is commenced at the left end of the portions of gut enclosed in the clamp, and ends at the right. The length of the sutured line should be at least two inches. In front of this line an incision is now made into the stomach and jejunum, the serous and muscular layers of each being carefully divided until the mucous membrane is reached. As the cut is made the serous coat retracts and the mucous layer pouts into the incision. An ellipse of the mucous membrane is now excised from both stomach and jejunum, the portion removed being about one and three-quarter inches in length and half an inch in breadth at the center. The stomach mucosa shows a tendency to retract; it is therefore seized with a pair of miniature vulsella on each side. No vessels are ligatured. The inner suture is now introduced. It embraces all the coats of the stomach and jejunum, and the individual stitches are placed close together and drawn fairly tight so as to constrict all vessels in the cut edges. The suture begins at the same point as the outer one, and is continued without interruption all round the incision to the starting point, where the ends are tied and cut short. It will be found that there is no need to interrupt the stitch at any point, for there is no tendency on the part of the sutured edges to pucker when the stitch is drawn tight. The clamps are now removed from both the stomach and the jejunum in order to see if any bleeding point is made manifest. Very rarely, about once in ten cases, a separate stitch at a bleeding point is necessary. The outer suture is now reassumed and continued round to its starting-point, being taken through the serous coat about one-sixth of an inch in front of the inner suture. This outer stitch is also continuous throughout; when completed the ends are tied and cut short as with the inner stitch. There are thus two suture-lines surrounding the anastomotic opening: an inner, hemostatic, which includes all the layers of the gut; and an outer, approximating, which takes up only the serous and subserous coats. For both stitches I use thin Pagenstecher thread. No sutures are passed through the mesocolon and stomach. The gut is lightly wiped over with a swab wet in sterile salt solution, the viscera returned within the abdomen, and the partial wound sutured layer by layer. When the patient is replaced in bed the head and shoulders are supported by three or four pillows. The operation lasts from beginning to end about thirty to thirty-five minutes, but can be shortened by five or ten minutes if the condition of the patient demands it.

With regard to the after-treatment there is but little to say. Nutrient enemata are given every four hours, and the bowel is washed out every morning with a pint of hot water; no fluid is given by the mouth for twelve hours, or until the ether sickness is over; then water in teaspoonful doses every fifteen minutes is given, and the quantity increased and the intervals lessened if sickness is not aroused. At the end of forty-eight hours milk and a little pudding, soups and such like are given. By the eighth day fish and minced chicken are taken, and in less than a fortnight solid food will be relished. The patient generally requires a caution not to overeat during the first month or two, for often the appetite is ravenous.

*Hour-glass Stomach.*—By hour-glass stomach ("bilocular stomach"—"hour-glass contraction of the stomach") is understood that condition in which the stomach is divided into two compartments by the narrowing of the viscus at or near its center. The two loculi so formed may be almost equal in size, or one, generally the cardiac pouch, may be very much larger than the other. In one instance (Case 14) I have seen the stomach divided into three pouches, and in another (Case 15) a condition of hour-glass duodenum was associated with hour-glass stomach; so that four pouches, two larger in the stomach, two smaller in the duodenum, were seen. The isthmus connecting the two parts of the stomach is generally found at or near the middle of the viscus; but owing to stasis of the food, the cardiac complement becomes dilated, and is then much larger, thicker and more capacious than the pyloric. The pyloric pouch is, however, not seldom dilated also, and in such circumstances a pyloric or duodenal stenosis will also be found.

*Pathogeny.*—Hour-glass stomach is usually described as being "congenital" and "acquired." Of these forms, the congenital is said to be the more frequent.

I have carefully considered the question as to the existence of hour-glass stomach as a congenital deformity, examining all the specimens that I could find, and reading carefully the records of, I believe, all the published cases; but I remain confident in my belief, expressed in a paper in the *Lancet* two years ago, that there is no evidence whatever which will establish the claim of those who assert that the disease is often congenital in origin. Since I first threw doubts upon the congenital origin of many of the cases of hour-glass stomach, and showed that in almost all obvious evidence of old ulceration could be found, several investigators have supported my conclusion by observations made during the course of operation or on post-mortem examination. There is, indeed, no inherent improbability in the existence of congenital hour-glass stomach, but it lacks proof.

Acquired hour-glass stomach may be caused by (1) perigastric adhesions; (2) ulcer, with local perforation and anchoring to the anterior abdominal wall; (3) chronic ulcer generally at or near the middle of the organ; malignant disease.

1. Perigastric adhesions may result from many causes,—gastric ulcer, old tuberculous peritonitis, inflammatory affections of the gall-bladder, etc. In rare instances these adhesions may be the sole cause of the partition of the stomach; in many they are no more than contributing causes. They were well seen in a case related by Cumston.

2. Ulcer, with local perforation and anchoring of the stomach to the anterior abdominal wall,—this was the condition I found in my first case. It results from gradual deepening of a chronic ulcer. As the ulcer approaches the serous coat of the stomach, a few adhesions form, binding the viscus to the anterior abdominal wall, and preventing the bursting of the ulcer into the general peritoneal cavity. If the ulcer be on the posterior surface, a soldering to the pancreas may result, as in one case I have recently seen. When the stomach is anchored in its middle, the pouches on each side, but more especially on the cardiac side, show a tendency to sagging, and this, with the cicatricial contraction taking place in the ulcer, results in the hour-glass form of the stomach.

In three recorded cases an ulcer at the isthmus of an hour-glass stomach has perforated into the peritoneum and caused death. The first case was related by Siewers, the second by my friend, Mr. W. H. Brown, and the third by Thomsen.

3. Chronic ulcer: A chronic ulcer of the stomach is characterized by the thickness and induration at its base. In the healing of such an ulcer, especially if large in size or circular, a considerable amount of contraction will necessarily take place, and a high degree of narrowing of the stomach may result.

*Symptoms of Hour-glass Stomach.*—An hour-glass stomach can be diagnosed with certainty, if attention be paid to a certain combination of symptoms. In my first six cases only one was diagnosed; in my last nine cases, seven were diagnosed with certainty; in one of these the diagnosis was made by the medical attendant, Dr. McGregor Young, before I was asked by him to see the patient. The symptoms will naturally vary according to the position of the constriction in the stomach; if this lies near the cardiac orifice, the clinical picture will resemble that given by esophageal obstruction low down; if near the pyloric orifice, the symptoms are those of dilated stomach. But, wherever the narrowing may be, attention to the following signs will, in almost every case, enable a diagnosis to be made with confidence:

1. If the stomach tube be passed, and the stomach washed out with a known quantity of fluid, the loss of a certain quantity will be observed when the return fluid is measured. Thus, if 30 oz. be used, only 24 can be made to return, as in Dr. McGregor Young's case already mentioned. Wölfler, who called attention to this sign, said that some of the fluid seemed to disappear "as though it had flowed through a large hole,"—as indeed it has, in passing from the cardiac to the pyloric pouch (Wölfler's "first sign").

2. If the stomach be washed out until the fluid returns clear, a sudden rush of foul, evil-smelling fluid may occur; or, if the stomach be washed clean, the tube withdrawn and passed again, in a few minutes several ounces of dirty, offensive fluid may escape. The fluid has regurgitated through the connecting channel between the pyloric and cardiac pouches (Wölfler's "second sign").

3. Paradoxical dilatation—if the stomach be palpated and a succussion splash obtained, the stomach tube passed and the stomach apparently emptied, palpation will still elicit a distinct splashing sound. This is due to the fact that only the cardiac pouch is drained; the contents of the pyloric remain undisturbed and cause the splashing sound on palpation. For this phenomenon

Jaworski has suggested the appropriate name, "paradoxical dilatation." Jaboulay has pointed out that if the cardiac loculus be filled with water, a splashing sound can still be obtained by palpation over the pyloric pouch. The sign of paradoxical dilatation is best elicited after washing out the stomach in the ordinary manner. When the abdomen is examined at the completion of the washing and when the stomach has been apparently drained quite dry, a splashing sound is readily obtained, for some of the fluid used has escaped into the pyloric pouch through the connecting channel.

4. Von Eiselsberg observed in one of his cases, that on distending the stomach a bulging of the left side of the epigastrium was produced; after a few moments this gradually subsided and concomitantly there was a gradual filling up and bulging of the right side.

5. Von Eiselsberg also calls attention to the bubbling, forcing, "sizzling" sound which can be heard when the stethoscope is applied over the stomach after distention with $CO_2$. If the two halves of a Seidlitz powder are separately given and the stomach be normal or dilated, no loud sound is heard anywhere except at the pylorus; if a constriction is present in the stomach, a loud, forcible, gushing sound can be easily distinguished at a point two or three inches to the left of the middle line.

6. I first called attention two years ago to a sign which I have since found of great service in establishing a diagnosis of hour-glass stomach. The abdomen is carefully examined, and the stomach resonance percussed. A Seidlitz powder in two halves is then administered. On percussing, after about twenty or thirty seconds an enormous increase in the resonance of the upper part of the stomach can be found, while the lower part remains unaltered. If the pyloric pouch can be felt, or seen to be clearly demarcated, the diagnosis is inevitable, for the increase in resonance must be in a distended cardiac segment. If the abdomen be watched for a few minutes, the pyloric pouch may sometimes be seen gradually to fill and become prominent.

7. Schmidt-Monard and Eichorst have seen a distinct sulcus between the two pouches inflated with $CO_2$. In Case 10, page 81, in my list, the two pouches with a hard, as I thought, malignant mass between them, could be readily seen. When both pouches were distended with $CO_2$, alternate pressure upon them showed unmistakably that they communicated through a very narrow orifice, for the one could be emptied slowly into the other, and the fluid could be felt to ripple gently through. The diagnosis in such a case is simplicity itself. In Case 8 a distinct notch was seen at the lower border of the inflated stomach.

8. Ewald has called attention to two signs which he considers of value in establishing a diagnosis. When the stomach is filled with water and examined by gastro-diaphany the transillumination is seen only in the cardiac pouch; the pyloric pouch remains dark.

9. The deglutable India-rubber bag of Turck and Hemmeter is passed and distended. The bulging caused thereby is limited to the cardiac pouch which lies to the left of the middle line.

The two aids to diagnosis of greatest value are, it will be seen, the washing out of the stomach and its distention with gas by the administration of a Seidlitz powder in two portions. The fluid used for the washing must be carefully measured before use; the tube is then passed, and the stomach emptied, the contents set aside in a separate dish, and the washing commenced. All the fluid now returning is collected in a separate vessel and carefully measured. The two signs of Ewald are of little importance; a correct diagnosis can always be made without them.

*Differential Diagnosis.*—The two conditions for which an hour-glass stomach is liable to be mistaken are obstructions in the lower part of the esophagus and pyloric stenosis. If the constriction in the stomach is within an inch or two of the cardiac orifice, the upper loculus of the stomach will be very small in size, and capable, therefore, of holding only small quantities of food. Food when swallowed may be regurgitated within a few minutes almost unaltered, and the patient may tell the same story of difficulty in "getting the food down," as is told by one whose esophagus is obstructed. A correct diagnosis can be made by introducing the esophageal bougie; if the bougie passes over sixteen inches from the teeth, the obstruction probably lies in the stomach.

If the constriction be near the pylorus, the cardiac complement will be dilated, and will present the same appearances and signs as a dilated stomach; Wölfler's two signs (1 and 2 in the list given) will generally enable a correct diagnosis to be achieved.

If the obstruction should lie at any point between the two mentioned, there should be no difficulty in making a correct diagnosis.

*Treatment.*—The treatment of hour-glass stomach may be beset with difficulties. If the stricture is near the cardia, or if the cardiac complement be bound up in adhesions, there may be great mechanical hindrance to the performance of any operation. When the abdomen is opened, a thorough examination of the whole stomach must first be made. The dilated pyloric sac may so completely resemble the whole stomach as to lead to the performance of a gastro-enterostomy between it and a loop of jejunum. Several cases are recorded in which this mistake has been made, and it is therefore necessary to emphasize the importance of an examination of the whole stomach up to the cardiac orifice in every case, no matter how obvious the diagnosis of "dilated stomach" may have seemed.

In many cases of hour-glass stomach no single operation will suffice to relieve the symptoms. This is due to the fact that where a stricture is present in the body of the stomach, a second stricture near the pylorus may also be found. If there be any dilatation of the pyloric complement, a constriction at the pylorus or in the duodenum will certainly be found. This dual stenosis, which has not received adequate attention from any writer, accounts for the lack of permanent improvement seen in many of the recorded cases. If in such circumstances a gastro-enterostomy is performed between the cardiac pouch and the jejunum, the pyloric pouch becomes a reservoir, incapable of efficient emptying, wherein food lodges and becomes sour. Symptoms of stasis are then observed, acid, bitter eructations, occasional vomiting, a sense of heaviness and heat at the epigastrium and distaste for food, and, as in case recorded by Terrier, a second operation is necessary. If a gastroplasty is performed the stomach cannot empty itself because of the pyloric stenosis, and the symptoms are unrelieved. Such a condition of double stenosis can therefore only be adequately treated by the performance of two operations at the same time, gastroplasty and pyloroplasty, gastroplasty and gastro-enterostomy from the pyloric pouch, gastrogastrostomy and gastro-enterostomy, or a double gastro-enterostomy, a loop of jejunum being opened at two points,—at the upper into the cardiac pouch, at the lower into the pyloric.

The following are the operations that may be practised: (1) Gastroplasty; (2) gastro-gastrostomy or gastro-anastomosis; (3) either of the foregoing, with gastro-enterostomy from the pyloric pouch, in cases of dual stenosis; (4) gastro-enterostomy from cardiac pouch, when the pyloric pouch is so small that it can be ignored; (5) gastro-enterostomy from both pouches; (6) partial gastrectomy.

The operation selected will necessarily depend upon the condition which is found. Thus I performed: Gastroplasty alone in Cases 1, 2, 3, 5, 11; gastro-enterostomy alone in Cases 6, 7, 8, 9; gastroplasty and gastro-enterostomy in Cases 12, 13; gastrogastrostomy alone in Case 4; gastrogastrostomy and gastro-enterostomy in Cases 14, 15.

Partial gastrectomy is the operation of choice in cases of malignant stricture in the body of the stomach. Gastroplasty was first performed by Bardeleben in 1889; later by Kruckenberg, Doyen and others. Gastrogastrostomy was first performed by Wölfler in 1894. In 1895 F. Sedgwick Watson performed a gastro-anastomosis by folding the pyloric pouch over the cardiac pouch, with the constriction as a hinge, and uniting the apposed surfaces.

The number of cases upon which this paper is based is as follows: Perforating gastric or duodenal ulcer, 12 cases, 6 recoveries; gastro-enterostomy for chronic ulcer, etc., 70 cases, 1 death; pyloroplasty, 3 cases, 0 deaths; hour-glass stomach, 15 cases, 3 deaths; gastroplication, 1 case, recovered; excision of ulcer for hematemesis, 1 case, died.

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**Prophylaxis of Tuberculosis in Denmark.**—Among other precautionary measures, it is proposed to make obligatory the reporting of tuberculous cases in Denmark, and to exclude tuberculous subjects from the practice of medicine, of nursing and school-teaching.

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## PROFESSIONAL DISCRETION. THE MEDICAL SECRET.

BY PRINCE A. MORROW, M.D.,

OF NEW YORK.

(Continued from Page 1014.)

*After Marriage.*—While it is the duty of the physician to employ any justifiable means to prevent the premature marriage of a venereal patient, yet it often happens that he is not consulted during the prematrimonial period and his advice is only asked after the marriage has been consummated and the disease introduced into the household.

There are a variety of situations which present themselves in practice. The patient may have married believing himself cured; he may have received an infection from an exposure just before marriage, the results of which are not manifest until after marriage; he may have become contaminated from an exposure *post nuptias.* His wife may not yet have been exposed to contamination or she may already have been infected. It is evident that the physician's duty will be rendered more difficult and delicate in view of these more complicated situations.

In the first place his manifest duty is to limit the disease if possible to the one who has no right to complain of it and prevent its propagation to others, to establish a sanitary cordon which shall protect the woman and her offspring. He will find this task extremely difficult under conditions created by the exigencies of a life in common and which are so favorable to contagion. If the man has syphilis in an active contagious stage, it will be necessary not only to interdict all sexual intercourse but to urge that every precaution be taken against exposure to the multiple and varied modes of extragenital infection, such as might occur from kissing, or through accidental and unconscious contacts from sleeping in the same bed, using the same drinking or eating utensils, etc. If the wife has already become infected, it is of the utmost importance that she should have thorough and efficient treatment, not only to protect her from the individual risks of the disease, but also to secure its preventive influence upon the hereditary transmission of the disease.

The important question comes up in this connection whether the wife should be informed of the name or nature of her disease.

The fixed rule of professional conduct in these cases, from which there can be no deviation, is that no information or hint even of the nature of the disease should come from the physician. It matters not what may be the feelings of indignation or disgust he may entertain for the *man,* he must zealously guard the secret of the *patient;* the harm that has been done and cannot be undone, the main indication is to limit its ill-effects.

It is a question whether it is not better in the interest of the wife as well as of the husband that she should not know or even suspect the nature of her disease, if it can be possibly concealed from her, and thus spare her the mental anguish, the sense of injury, shame and humiliation which would come from the revelation.

From this point of view Langlebert advises that "the husband should have in the physician a faithful and intelligent ally who conspire together to conceal the nature of the disease."

The general trend of advice given by most writers is that the patient should "never own up." "Confess nothing, keep up appearances and get well." Such is the formula for his guidance. Now, it is conceded that the physician in his efforts to save a compromising situation and preserve harmony and peace of a household, is justified in employing all the resources of his tact, all the skill of his diplomacy, and, if need be, resort to evasion and subterfuge in protecting the patient from the consequences which might follow the wife's knowledge of the harm he has done her.

While this policy of concealment coincides with the natural indisposition of the husband to avow his fault, its wisdom is open to question. The fact must not be lost sight of that there are other interests beside that of the husband to be considered and most important is that of the wife in reference to treatment. Unfortunately in keeping up attempts at deception, the infected wife may not only be made to incur all the individual risks of the disease communicated by her husband, but she is often denied the benefits of prompt and efficient treatment. Incredible as it may appear, many husbands who infect their wives employ every possible means to prevent them consulting a physician from the fear of exposure of their infidelity which must come from the wife's knowledge of the nature of her disease. The physician cannot too strongly arraign the selfishness and lack of humanity on the part of husbands in this regard, and should insist upon the wife receiving proper treatment as the condition of his continuing his professional relation with the husband.

Now, in practice it will be found extremely difficult, in many cases impossible, to treat a woman during the prolonged period necessary to a cure and dissimulate the nature of her trouble. Notwithstanding the most painstaking precautions on the part of the physician in concealing the character of the remedies employed, the exercise of his diplomacy in parrying her embarrassing questions as to "why she should have the same symptoms as her husband," etc., and in persuading her of the necessity of continuing treatment in the absence of all manifestations, sooner or later she is apt to divine the nature of the disease for which she is treated, so that the little comedy of deception and falsehood most often proves a dismal failure.

Thibierge strongly advises that in all cases when the husband has syphilis he should make an avowal of his fault, whether the wife has been infected or not. This simplifies the whole situation. If she has not been infected, there may be an intelligent coöperation between both partners in taking proper precautions against it, and if she has already been contaminated, both can properly be treated, while pregnancy, which would be followed by such deplorable consequences, may be avoided.

To take off the keen edge of the situation, he suggests that the husband might forge the history of an extragenital infection, the probability of which may be attested by the physician, rather than confess that the disease was contracted from a former mistress or by a chance liaison.

*Syphilis and Nurses.*—The birth of a child tainted with syphilis introduces into the family a new and dangerous focus of infection, since there is no fact better established than that the cutaneous and mucous accidents of hereditary syphilis are extremely contagious. The child may be a source of multiple contagions; abundant clinical observations prove that nothing is more dangerous to the persons surrounding it than a syphilitic infant.

In France and other Continental countries where it is the custom to confide children at birth to wet-nurses the question of the nourishment of a syphilitic infant assumes a serious importance. A syphilitic child will almost certainly infect a healthy nurse; the nurse upon returning to her home may infect her husband, her own children and through them numerous others of her entourage. Medical literature abounds with records of family and social epidemics affecting in some instances as many as sixteen, eighteen, twenty-three persons or more, the origin of which could be traced to a syphilitic nursling.

In view of the multiple contagions which may originate from a syphilitic nursling, the French law imposes a special obligation upon both the parents and the physician that the nurse should be informed of the nature of the child's disease before she assumes her duties, although it is evident that compliance with the law compels a violation of the secret that one or both parents may be syphilitic. In case of omission to give this information to the nurse, she may recover heavy damages, or a lifelong pension, for the injury received from the infection.

The physician's duty in a situation of this kind is to oppose the employment of a wet-nurse and insist that the mother should nurse her own child. It is a law of syphilis, first formulated by Colles, that a child syphilitic from birth never communicates the disease to its own mother by nursing, even though she herself may be apparently exempt from the disease. Maternal nursing should be insisted upon even when the child shows at birth no signs of having inherited the parental disease, since the possibility of its infection cannot be excluded until a period of several weeks or months has elapsed.

In this country where wet-nursing is not so much in vogue; and in cases where the mother is unable or unwilling to nurse her child, artificial nourishment is usually employed, it might appear that this element of danger is eliminated. On the contrary, when an ordinary or dry-nurse is employed for the care of a syphilitic infant, the risks of infection differ only in degree. While she is not exposed to contagion from the child's mouth while nursing it, yet she is exposed to multitudinous risks of inoculative contact, incident to preparing or tasting the child's food to see whether it is too hot or too cold, from washing and dressing the infant, from sleeping in the same bed, and from the thousand and one attentions the infant constantly requires. In view of the dangers if infection incidental to the occupation of the dry-nurse in caring for a syphilitic child, it is a question whether the physician would not be justified in warning her of these dangers and of the necessity of taking precautions to guard against contagion.

There is another aspect of the relations between the nurse and the infant in respect to syphilitic infection of interest in this connection. The child may be healthy and the nurse syphilitic. The child is liable to become infected by the nurse and distribute the contagion to the mother and to other members of the family.

In employing a wet-nurse the physician is usually consulted and it is his duty to make the most careful and thorough examination of the nurse in order to be sure that she is free from any taint of syphilis before she is engaged. In employing a dry-nurse for young children, the physician is rarely consulted. My own experience would lead me to believe that it is by no means infrequent for women with syphilis, especially foreigners, to act as nurses for children. In my service at the New York Hospital many women applying for treatment for syphilis have given their occupation as "nurse," apparently oblivious of the fact of their disqualification for this duty not only on moral grounds but especially from the contagious character of their disease. In two or three instances, nurses have actually brought their little charges to the hospital with them—the parents, of course, being ignorant of this fact—giving as a reason that they could not "get off" for the afternoon. In all these cases I succeeded in having them give up their employment, either by persuasion or by threats of exposure.

A situation may present itself when a syphilitic nurse to young children, although warned of the danger to which she exposes them, obstinately refuses to give up a good situation. It then becomes a question, in view of the risks of infection to the children, their natural protectors, the parents, being ignorant of this danger and unable to protect them, whether the physician is not justified, when persuasion fails, in resorting to the extreme measure of warning the parents of the dangers their children incur of infection from the nurse. The French law, it would appear, while interfering to protect the wet-nurse from infection by the syphilitic child, does not extend the same protection to the healthy child against infection by the syphilitic nurse. There is no pecuniary liability of the nurse in case the child receives infection, possibly because she is seldom pecuniarily responsible for damages.

*Syphilis in Domestic Servants.*—The same question presents itself as to the line of conduct to be pursued by the physician in relation to syphilis in other servants. Domestic servants, as valets, butlers, chambermaids, cooks, etc., are in a certain sense members of the family or household. Their duties bring them into more or less intimate contact with their employers, in preparing food, in the care of the person and clothing, besides affording other opportunities of infection, such, for example, as soiling the seat of the water-closet, the surreptitious use of combs, brushes, sponges, pipes, cigar-holders, etc., belonging to their employers. The literature of syphilis insontium abounds in cases in which the disease has been conveyed by servants to employers through common use of eating or drinking utensils, toilet articles, douche-tubes, and many other miscellaneous articles. I have known a fat butler, fairly reeking with syphilis, who, despite my protests, continued his service in a fashionable family. Such modes of contamination of the disease are easily avoided and it is the physician's duty when treating a syphilitic servant in a household to inform him of the possible modes of contagion and, if necessary, insist upon his relinquishing his employment until the dangerous contagious stage is passed.

An employer may bring or send a servant to the physician, saying that he has observed certain suspicious symptoms, in regard to the nature of which he wishes to be informed. The physician may find that the servant is syphilitic. Now, in such a case the servant is the master of his own secret and the physician cannot reveal it. If the employer brings the servant, the physician is not justified in divulging the syphilitic nature of the servant's disease. He may disguise it under any non-compromising name and advise that the servant relinquish his place until he is cured. If the employer sends the servant with a letter, the physician may write an open letter, explaining the contents to the bearer, leaving it to his own discretion to deliver it or not, as he sees fit. In this way the party most interested is responsible for revealing the nature of the disease.

*Industrial Infections.*—There are numerous industrial occupations which may be the means or the occasion of spreading syphilis. Such cases as the following have occurred under my observation; a baker who had a syphilide of the forearm, with palmar lesions which were cracked and open, who continued, despite my remonstrances, his occupation of mixing and baking bread for a score or more of families, waiters in restaurants and hotels, who had syphilis in a dangerous contagious form—numerous cases of barbers and hair dressers who followed their occupations with syphilis in full activity of secondary manifestation—cigar- and cigarette-makers, men and women, with their mouths full of mucous patches.

It is well known that vendors of whistles and toy balloons are accustomed to test the toy by blowing it before selling it to children. Vendors of fruit moisten cloths with their own spittle to give it the luster that makes it attractive to purchasers. Numerous cases are on record in which syphilis has been contracted in this way. While the physician recognizes the imminent danger of contagion from these sources, he is powerless to interfere except by attempts to enlighten the patients as to the possible danger of their infecting others and to persuade them to relinquish their employment. While he recognizes these occupations by syphilitics as a menace to the public health he is not authorized to act.

The only practicable means of preventing infection from these sources would be for the sanitary authorities to forbid any person with active syphilis to engage in the occupation of nurse, domestic servant, baker, waiter, barber, vendor of toys, or in preparing food or drink—the same as is done in the prophylaxis of leprosy in certain countries. In order to make such a law practicably effective, the physician should be compelled to report the existence of syphilis in any one engaged in these proscribed occupations, and the Board of Health could then employ the necessary coercive measures. Contagions from these sources compared with those from prostitutes are relatively infrequent, but we must recognize the fact that the obligation to protect the innocent from a lifelong infection is much greater than the obligation to protect those who voluntarily and knowingly expose themselves to chances of contagion in an immoral way.

There are many other relations of syphilis which involve the question of the medical secret, such, for example, as mutual benefit societies, life insurance societies, syphilitics in hospitals and dispensaries, etc. Parents may bring their sons or daughters to the hospital and, after examination, demand to know the nature of the trouble. If it be of venereal nature, the physician has no right to reveal it without the consent of the patient. I have more than once received a letter from the mother of a young woman about as follows: "I accidentally found a card belonging to my daughter, showing that she was being treated in the 'Skin and Venereal Class' of the New York Hospital. I believe her to be a good girl. Please tell me if she has a venereal disease." My practice has always been to look up the name and diagnosis; if the patient has a non-syphilitic skin trouble, to assure the mother that her suspicions are groundless; if specific, that the rules of the Hospital forbid the communication of the nature of a patient's disease.

The profession should recognize the obligation to protect the secrets of syphilitic patients in hospitals, as far as possible. The publication of pictures of cases revealing syphilis in a subject is a breach of professional discretion.

It is well known that syphilis may be conveyed to the physician in the discharge of his duties and also that syphilis may be communicated by physicians to patients by the use of tongue depressors, speculums, porte-crayons of nitrate of silver, Eustachian catheters, eye, nose, throat and dental instruments. If the physician is unfortunate enough to convey syphilis in this way he should consider it his duty to inform the patient of the nature of the trouble that he may avoid the chances of infecting others and at the same time receive proper treatment.

When the physician acquires syphilis it may be accepted as a rule of professional conduct that he should discontinue his professional work so long as there is the most remote danger of contagion through its exercise. More than 50 cases of professional syphilis have come under my personal observation. One case was that of a physician with a large obstetrical practice in this city who had a digital chancre, the nature of which was not recognized. He came to me nearly a month after the appearance of constitutional symptoms. He had never suspected that the insignificant, dusky-red infiltration around the ungual border was the initial lesion. During this period of three months, before the nature of the lesion was recognized, he had attended 40 or 50 women in confinement.

66 West Fortieth Street.

## A CASE OF BACTERIURIA RESEMBLING WEIL'S DISEASE.

BY G. REESE SATTERLEE, M.A., M.D.,
OF NEW YORK;
INSTRUCTOR IN HISTOLOGY, NEW YORK AND BELLEVUE HOSPITAL MEDICAL COLLEGE.

The history is that of a male, aged fifty-six years. Habits have been non-alcoholic but a fairly heavy eater. He has had scarlet fever. There is no history of syphilis. Five years before this illness he had an attack of acute intestinal toxemia with temporary paralysis of the lower extremities, vomiting, diarrhea and a partial loss of consciousness. This followed a large dinner, eaten the night before.

The previous records of his urine are as follows: Oct. 29, 1901, amber, clear; sp. gr., 1.020; faintly alkaline, no albumin, no sugar, .7 per cent. urea. Nov. 17, 1901, amber, clear, highly acid, slight flocculent precipitate, no albumin, no sugar, .65 per cent. urea, calcium oxalate crystals, no casts. Other records of urine examinations previous to this have been lost, but neither albumin nor bacteria to any appreciable extent were present at any time.

For a short time before the present illness, which began Nov. 29, 1901, patient had slight constipation and flatulence. The night before the attack, he ate a large Thanksgiving dinner. The following evening he had a very severe continuous pain over the lower part of the sternum, with some flatulence and general abdominal distention. The next morning the pain was no better; the distention and flatulence were still present. Then followed severe chills with profuse sweating and a condition of shock, slight delirium and stupor. I saw him at six in the evening, when he was in a semi-stupor and complaining loudly of pain over the lower sternum. The temperature was 103° F., pulse 120, and the respirations very rapid and labored. The heart's action was tumultuous and intermittent, with loud systolic murmurs at the apex and base. The second aortic sound was loudly accentuated. At 8 P.M. the temperature reached 105° F., pulse 134 and the respirations 43.

Examination of the lungs showed numerous subcrepitant râles all over the right lung, with shallow and deficient breathing, but no other signs. There was no tenderness over the abdomen nor apparent enlargement of the liver. A tentative diagnosis of lobar pneumonia was made and treatment accordingly carried out.

The tongue was dry, and with the labored and irregular heart's action, the prognosis seemed bad. At 11 P.M., however, the temperature dropped to 103° F., pulse to 104 and the respirations to 32. The heart's action became regular and the general condition was much improved.

| WEIL | JAEGER | BROOKS | LIBMAN | PROTEVS ZENKERI | BAC. ENTERIDITIS | SATTERLEE |
|---|---|---|---|---|---|---|
| | Motile | Motile | Motile | Motile | Motile | Motile |
| Similar to Jäger | Bacilli and cocci | Bacilli and cocci polymorphic, bipolar staining | Bacilli and cocci, sizes vary | Small bacilli and cocci | Thick, short bacilli | Bacilli and cocci vary in size bipolar |
| | No spores | No spores | No spores | No spores | Spores | No spores |
| | Some liquefy gelatin, others not | No liquefaction | Some liquefy gelatin, others not | No liquefaction | Liquefaction | No liquefaction |
| None | Greenish fluorescence on agar | Thick, heavy spreading | Greenish fluorescence on agar | | | Thick mucoid growth on agar |
| | Milk not coag. | No coag. | Coag. in 24 hrs. | Milk coag. slowly | Milk coag. slowly | Milk coag. slowly |
| | React. unchanged | | | | | Slightly acid |
| | Ferment marked | Ferment marked | Ferment marked | Ferment present | Ferment present | Ferment marked |
| | Gram decolorizes | Gram decolorizes | Gram decolorizes | Gram decolorizes | Gram decolorizes | Gram decolorizes |
| | No indol | No indol | Indol present and rapid | No indol | Indol present | Indol present |
| Changes in experiments on animals | Pathogenic to mice and pigeons. Acute hepatitis. Fatty degeneration of kidney, acute neph. hemorrh. in other organs | Path. to mice, guinea pigs, monkeys, *not* to rabbits. Acute necrotic hepatitis, acute nephritis. Acute ganglion cell degeneration | Path. to rabbits. Fatty degen. and necrosis of liver cells, acute nephritis, Fatty deg. of renal epith. | | | Path. to guinea pigs and to rabbits in large quantities. Acute hepatitis, Fatty degen. of liver cells, acute nephritis, acute ganglion cell degen. hemorrh. in other organs |

At 6 A.M. the next day, the temperature, pulse and respirations were normal. The skin and scleræ were deeply jaundiced. A large, brown normal stool was passed.

Examination of the urine showed it to be dark brown, cloudy, sp. gr. 1.026, containing 5 per cent. of albumin by volume, no sugar. Bile salts are present. There are numerous granular and epithelial casts, all bile stained and numerous bacteria. The highest point the temperature reached this day was 100.3° F. at 9 P.M.

On the third day of the illness, the temperature reached 103° F. The urine was dark brown, cloudy, acid, sp. gr. 1.012, contained 5 per cent. of albumin and 1.6 per cent. of urea. There were fewer granular casts than the last time, with bile-stained epithelium and spermatozoa. The urine was very cloudy directly after passing, due to the very large number of bacteria present. Cultures were taken from this urine. In the evening, a large, formed, clay-colored stool was passed, showing that there must have been obstruction in the bile ducts. On the fourth day the jaundice became much deeper. On the fifth day, the temperature reached 100.2° F., after which convalescence was uneventful, but accompanied with severe muscular pains, weakness and indigestion for several months. The albumin in the urine gradually disappeared, until at the end of two weeks none was present except a very faint trace, by the heat and acetic acid test. The urine was always very cloudy and the bacteria constant. This was uninfluenced by the administration of urotropin.

One month later the bacteriuria persisted. Lavage of the bladder had no appreciable effect upon it. The prostate was not enlarged but slightly soft. Secondary infection of the prostate may have had some effect in keeping up the bacteriuria. Occasionally for a day or two the urine would be clear on passing and then would become cloudy again.

Three months later, patient had a somewhat similar attack, without jaundice, however. He has had no illness since then.

I isolated a bacillus from the urine resembling the proteus group.

The chart shows a comparison of some of the chief characteristics of the bacillus with those of Weil, Jäger, Brooks, Libman, the *Proteus Zenkeri* and the *Bacillus enteriditis.* The two latter are similar bacteria which inhabit the intestinal tract. The *Bacillus coli communis* is excluded at once. Weil isolated his bacillus from the urine of a case of acute febrile jaundice in 1886.

Jäger found his bacillus in the urine of a case of acute febrile jaundice. He also isolated the bacillus from the bodies of sick fowls whose bodies had contaminated the water supply.

Brooks isolated his bacillus from the organs at autopsy. The patient died with the symptoms of Weil's disease.

Libman found a bacillus in the pus of a liver abscess, that was followed by an acute febrile jaundice.

Jäger's and Brooks' experiments were very careful and thorough.

Cultures were taken from the urine passed the second day of the illness. Twenty-four hours after, cultures show a profuse whitish mucoid growth. Morphologically the bacteria are large bacilli, with heavily stained ends and a faintly stained center. In places they look like large diplococci. They stain readily with the aniline dyes. The bacilli have no definite arrangement. No spores are present. The organism is slightly motile.

Superficial agar colonies have a dark-yellow brown center and a light-gray fibrous-like border. Deep agar colonies are large, oval or round, yellowish brown and coarsely granular.

Deep gelatin colonies are grayish-yellow with lighter border, of a definite smooth contour. Gelatin stabs show a profuse rapid growth with fine arborescent projections. On the surface they are circular and spread out like a tack-head. There is no liquefaction.

Growth in broth is rapid and produces cloudiness with a thick, white, mucoid pellicle. There is also a white, flocculent, precipitate. Agar growths are acid in reaction.

The bacillus is a faculative anaerobe. Milk is coagulated slowly, reaction slightly acid after growth of 48 hours. Glucose fermentation is marked, the gas produced containing carbon dioxide but no hydrogen sulphide. Indol is present. The growth on potato is white, thick and slimy and produces discoloration of the medium.

Cultures in normal, acid urine show rapid abundant growth with cloudiness but no pellicle. The urine is acid up to 72 hours, after that alkaline.

*Animal Experiments.*—(1) A small guinea pig, injected subcutaneously with 2 c.c. of a 48-hour broth culture. The pig died during the night. The autopsy showed intense congestion of all the organs. There was a slight amount of turbid fluid in the peritoneal cavity. Cultures taken from the heart, peritoneum, liver and bladder show pure cultures of the bacillus. (2) Guinea pig, injected subcutaneously with 1.5 c.c. of a 48-hour broth culture. The animal survived with apparently no bad effects. (3) Guinea pig, injected intraperitoneally with a 2 c.c. of a 48-hour broth culture. A few hours later the animal became very quiet, remained in the corner of its cage and did not eat. It died during the night apparently without convulsions. Autopsy showed absence of rigor mortis. The heart was apparently normal; the ventricles firmly contracted. The abdomen was soft. The peritoneal cavity contained about 5 c.c. of a sero-bloody fluid. The stomach was full of food. The colon was slightly distended with gas. The blood vessels of intestine were congested. The kidneys were congested and edematous. The liver and spleen were congested. There was no urine in the bladder. The blood vessels of the brain were deeply injected. Pure cultures were obtained from all the organs.

In order to determine the possible effect of toxines, a broth culture of several days' standing was filtered and shown to be sterile. (4) Guinea pig was injected subcutaneously with 2 c.c. of the filtered culture with a negative result. (5) Guinea pig was injected intraperitoneally with 2 c.c. of the filtered culture with a similar result.

(6) A 1,123 gram rabbit was inoculated intravenously with 2 c.c. of a broth culture. Twenty hours later, the animal looked sick and the weight had fallen to 988 grams. No evidences of jaundice were present. The injected ear was edematous and paralyzed. The animal was catheterized and a specimen of urine obtained.

Examination of the urine showed it to be cloudy, acid, no sugar, a heavy trace of albumin, urea 2.7 per cent. No bile was present. There were numerous hyaline casts and calcium oxalate crystals, numerous bacteria and a few leucocytes. Cultures from this urine show a pure culture of the bacillus.

On the following day the rabbit improves, eats well, and weighs 1,028 grams. The ear is still swollen and a patch of dry gangrene has appeared. The urine contains no albumin, only a few actively motile bacteria and a few granular casts are present. Cultures again show the bacillus in pure culture. The rabbit had evidently recovered from the illness caused by the injection into the circulation, and is now suffering only from the local disturbance in the ear. The rabbit made a complete recovery.

(7) Five c.c. of a two-day broth culture is injected into the peritoneal cavity of a 1,446 gram rabbit. Six hours later, the animal appears sick and does not eat. It is quiet but moves about when excited. The next morning the animal is found dead. Unfortunately parasitic infection of the liver and kidneys obscure the pathological findings.

The results of experiments on animals showed the bacillus to be toxic for guinea pigs and to a less degree for rabbits. The bacillus was recovered in pure culture from all the organs. Filtered cultures of the bacillus produced no effect.

The *microscopical examination* of the viscera of the guinea pigs shows about the same picture in each instance. The *heart* shows a moderate congestion of the blood vessels, especially of the capillaries, otherwise normal. There is slight congestion of the *pulmonary* blood vessels.

There is intense congestion of the *liver*, especially of the portal radicles. The liver cells show acute parenchymatous and marked fatty degeneration, most extreme in the central part of the lobule. In places the liver cells are almost completely destroyed. The bile capillaries are much distended and there is marked pigmentation of the liver and connective tissue cells. Apparently a hypersecretion of bile is present.

The blood vessels of the *spleen* are markedly congested. There is recent hyperplasia in the lymph follicles and a marked pigment deposit in all the parenchyma cells.

In the *kidney* there is a general injection of the blood vessels, notably of the Malpighian tufts and of those surrounding the convoluted tubules. The cells of the convoluted tubules are granular and their edges are jagged and irregular. In many cases the entire cell is broken down into fine detritus, found filling to more or less degree many of the tubules. Some of the collecting tubules contain fairly well-formed hyaline and granular casts.

The *brain* shows marked injection of the blood vessels. There are hemorrhages into several of the perivascular spaces. There is congestion of the blood vessels with capillary extravasations in the cerebral membranes. The Purkinje cells of the cerebellum show finely granular chromatolysis in many instances.

The microscopical changes in the viscera of the rabbit are very similar but not as marked.

*Summary.*—The picture presented by the original case was that of an acute febrile jaundice. There was a severe general infection which must have caused degenerative changes in the liver as well as in the kidney cells. The prolonged weakness and the general muscular pains during convalescence showed that the infection was a severe general one.

Experiments with a bacillus isolated from the urine, showed it to be toxic to guinea pigs and in a lesser degree to rabbits. Acute hepatitis was marked in all cases that came to autopsy.

Acute nephritis was also found. In the animal which survived the inoculation, the urine showed bacteriuria with albumin and casts.

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# PELVIC SUPPURATION IN THE FEMALE.*

BY ABRAM BROTHERS, B.S., M.D.,
OF NEW YORK;
ASSOCIATE IN GYNECOLOGY, NEW YORK POST-GRADUATE SCHOOL AND HOSPITAL; VISITING GYNECOLOGIST TO BETH ISRAEL HOSPITAL.

By the term "Pelvic Suppuration" we refer to that condition in which pus is present in the pelvis. The suppurative process ordinarily originates in the Fallopian tubes and ovaries, or in adjacent organs, such as the appendix vermiformis, or in the connective tissue of the pelvis, which may be its original site or its location secondary to extension from more remote regions. Thus we may have pus collections in preexisting organs, such as tubes and ovaries, which are, at least in the beginning, practically free and independent of the other structures in the abdominal and pelvic cavities; or the peritoneum may shut off pus collections as in peri-appendicular abscess or suppurating pelvic blood collections; or the connective tissue of the pelvis may break down as the result of advanced cellulitis and form "pelvic abscess."

For practical purposes pelvic suppurations may be anatomically separated into two classes: (1) adnexal; (2) connective-tissue. The former includes suppurations in the tubes (purulent salpingitis, pyosalpinx) and ovaries; the latter involves suppuration of the connective tissue alone, or what was formerly known as "pelvic abscess." The recognition of this elementary subdivision is essential for the proper understanding of the true indications for rational treatment. Of course, as will be shown further on, both conditions may be merged in the same patient or it may be impossible in certain cases to clearly differentiate the one from the other. But these objections do not weigh against the appropriateness of this rudimentary classification based on a purely anatomical basis.

Less than a quarter of a century ago only one variety of pelvic suppuration—that of the connective-tissue—was recognized. The operative boldness of Lawson Tait, and others, proved that the adnexa, in the majority of cases, constituted the real pus foci. So far was this new discovery carried that many denied the existence of connective-tissue abscesses altogether. Fortunately men of ripe judgment, mature experience, and conservative tendencies raised their voices in powerful protest against this ultra-swing of the pendulum and to-day we recognize the existence of both varieties of pelvic suppuration. We endeavor to differentiate the one from the other, and we apply to each the principles of modern surgery.

Pelvic inflammation precedes suppuration. Only in a small proportion of cases, however, does such inflammation result in suppuration. The writer, in the course of eighteen years' experience, has seen hundreds of cases of pelvic exudates disappear without operative aid. It is necessary to accentuate this fact for the benefit of those afflicted with the mania of making "exploratory laparotomies" and finding always in this class of cases apparently some pathological condition justifying the cutting of the belly. If they would leave these women severely alone Nature would, in the majority of cases, remedy the pathological state herself and without the abstraction of useful organs.

I have notes of only five cases which occurred under the age of twenty years and five cases beyond the age of forty years, so that we can safely place the age limit, in the vast majority of cases, at twenty to forty years, or the child-bearing period in a woman's lifetime.

In many of my cases I had the pus examined bacteriologically by Prof. H. T. Brooks of the Post-Graduate Hospital Laboratory. Although the number of these examinations is not sufficient to yield any new facts, I have been surprised at the frequency with which the presence of gonococci was noted even in cases in which I had no reason to suspect such an etiological factor. Thus quite a number of operations were done for pus collections following abortion or labor and the presence of gonococci (usually associated with other varieties of micro-organisms) has made me think that either this microbe started the pelvic suppuration during the puerperal period or that such pus foci were present previous to or independent of pregnancy.

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* Read at the December Meeting of the Alumni Association of Bellevue Hospital.

Perhaps it would be more accurate, however, to regard such cases as being of a mixed character, namely puerperal and gonorrheal.

Besides gonococci, the bacteriological findings in some of the cases, included diplococci, streptococci, staphylococci and the *Bacillus coli communis*.

For practical purposes, clinically, we may regard the origin of pelvic suppurations as follows: traumatic, appendicular, tubercular, puerperal and gonorrheal.

In 91 cases studied from the operating table, I get the following results: Gonorrheal origin, 33; gonorrheal origin, associated with abortion, 4; puerperal origin, 25; traumatic origin, 25; appendicular origin, 3; tuberculous origin, 1. Total, 91.

Two cases of pyosalpinx followed criminal abortion done by physicians of doubtful status. Twelve others, however, originated from manipulations done in the course of office practice by reputable colleagues. These manipulations consisted of violent examinations in diseased women, the use of the sound for diagnostic purposes, and of the cervical dilator for the purpose of curing sterility. Pelvic abscesses traceable to "legitimate" medical intervention would seem to indicate something rather "illegitimate." But I do not hesitate to go a step farther and say that a much larger amount of this unfortunate kind of work is done to the detriment of patients which never reaches the operating table. I refer to the numbers of cases of pelvic inflammation which get well under rest and ice to the abdomen and which have owed their origin to an "examination" or a "treatment" in a doctor's office or in a dispensary. I certainly have met dozens of such cases and suspect that in the earliest years of my experience I may have been the cause of a few myself. The origin of these cases can be traced to two causes which act either alone or in combination; namely, (1) traumatism; and (2) sepsis.

Secondary pelvic abscesses or sinuses, from suppurating blood-coagula, infected pedicle ligatures, etc., occurred in eleven of my cases. Some of them following operation for appendicitis, ectopic gestation, and dermoid tumor of the ovary, were unavoidable. In others, particularly those operated per vaginam, I am willing to concede that with advanced experience former errors are now avoided and better results obtained.

Although only 33 cases of gonorrheal pus collections have been operated by me they represent only a small proportion of the cases which have passed under my observation. It is well recognized that of all the varieties of pus met with in the female pelvis, that of gonorrheal origin is the least innocuous. At times women seem to carry these tumors for years without much suffering. I think that I have seen a few such cases even get well spontaneously after having declined to submit to operative intervention. Two women to my knowledge subsequently became pregnant and years later were in the enjoyment of perfect health. I have known some women, particularly those following a lewd vocation, to reappear after an interval of several years, with a pus collection on the opposite side after the original pus tumor had apparently spontaneously disappeared. I will add that this spontaneous disappearance of pus is not limited to the gonorrheal variety for I have convinced myself that a puerperal abscess of small size may similarly disappear. Of course such cases may suggest an error in diagnosis. Excluding several cases, in which puerperal exudates with clinical manifestations of pus spontaneously recovered, I will only allude to one case in which the aspirating needle thrust into such a mass above Poupart's ligament actually drew forth pus. This case was observed in a hospital for a month during which period the tumor gradually and completely melted away. Six months later she was said to be thoroughly cured.

We can explain these cases in the following manner: (1) Very small pus collections may actually undergo spontaneous absorption. (2) Even when not absorbed certain pus collections lose their virulence through the attenuation and death of their micro-organisms. Prudden, years ago, proved the complete sterility of such a pus-collection accidentally discovered in the course of a post-mortem examination; and I have accidentally in the course of a laparotomy for intestinal obstruction, due to bands, fallen upon such a shut-off pelvic abscess, the presence of which was not even suspected but which I know must have originated three years previously when she was laparotomized for a puerperal pelvic abscess; because the course of an old closed sinus led directly down to it. (3) Lastly, there is good reason to believe that pus-sacs may occasionally discharge themselves into the uterine cavity and thus bring about a spontaneous cure.

The association of the puerperal state with gonorrhea occurred in four of the operated cases. I believe that either the puerperal state or gonorrheal infection accounts for the preponderating majority (nearly 70 per cent.) of cases of pelvic suppuration in the female. But this is nothing new. I think, however, that the relation of gonorrhea to puerperal sepsis has not been sufficiently noted. In other words, how many cases of pelvic inflammation or suppuration after abortion or childbirth may not really owe their origin to gonococcus infection derived from the urethra, vagina, uterine cavity, or Fallopian tubes? The question ought to be attacked seriously because of the tendency of the public to hold the physician in charge of a case of labor responsible for such complications.

Ordinarily the pus of an appendicular abscess is shut off in the lower abdominal cavity in the immediate neighborhood of the appendix. In three of my cases, however, the appendix with the purulent collection was well down in the pelvis so that drainage had to include the depths of the pelvis. In fact, one of the cases later required counter incision and drainage per vaginam. In several cases there was found simultaneously a pyosalpinx with diseased adherent appendix.

I have seen two cases of tuberculous abscess in the female pelvis. The disease involved the Fallopian tubes which were hyperdistended with pus and bound down to adjacent structures by the densest of adhesions. One case was operated by a colleague and ended fatally. In another case in which I was bold enough to make the diagnosis of tuberculous pus tube previous to operation the pathologist reported the presence of numerous gonococci.

*Location of the Suppurative Process.*—In the course of operative work I was able to determine the location of the suppurative process in 107 cases as shown in the following table.

*Location of Pus in 108 Cases of Pelvic Suppuration.*—Fallopian Tubes. Pyosalpinx, 39; pyosalpinx, with ovarian cyst, 2; pyosalpinx, with parametric abscess, 1; purulent salpingitis, 10; purulent, with parametric abscess, 3. Ovaries. Ovarian abscess, 4; tubo-ovarian abscess, 7. Pelvic connective tissue. Pelvic cellular abscess, 28; with appendicitis, 3. Sinuses or stump suppuration, 11. Total, 108 cases.

In the 108 cases in this table there is a number of repetitions because of successive operations in the same patient. This is particularly true of the 11 cases included under "Sinuses and Stump Abscesses." Excluding these 11 cases we have 97 cases of which 28 involved the pelvic connective tissue, 3 were associated with or originated in appendicitis, and the remaining 65 originated in the tubes or ovaries. This means that nearly 70 per cent. of this series of cases positively traced to the adnexa. When we remember that nearly all of the cases of "parametric abscess" were treated by incision and drainage, and when it is shown that pus tubes or ovaries adherent to the cul-de-sac are absolutely indistinguishable during life by this method of operation from "parametric" or "pelvic" abscess it will be readily understood why I am ready to allow a much larger percentage in favor of adnexal abscesses. I will only refer to one case for proof of this assertion. The diagnosis of pelvic abscess was made in a moribund woman and confirmed by the aspirating needle. A rapid vaginal incision was made, allowing a pint of pus to escape. A drainage tube was inserted and the abscess cavity irrigated. The patient died several hours later and the autopsy revealed an immensely dilated pyosalpinx which had become agglutinated posteriorly to the cul-de-sac of Douglas. Superiorly there was found a small spontaneous perforation of the pus sac which had not been recognized during life and which had caused general peritonitis. Therefore, I think I am not far from the truth when I estimate that 75 to 80 per cent. of all "pelvic abscesses" originate from disease in the tubes or ovaries.

Connective-tissue abscesses, however, do certainly occur in a small proportion of the cases. Frequently enough we find suppuration in the connective tissues of the broad ligaments associated with a purulent condition in the tubes and ovaries. This very probably occurs through perforation of the thin-walled pus tube or pus ovary. Besides the broad ligament some of these associated abscesses were found in the pelvic connective tissue elsewhere, or in pouches formed by adherent omentum, intestine and uterus. In one case a pus tube was opened and drained per vaginam. Later, a large metastatic abscess was found dissecting its way up beneath the right abdominal wall and across to the median line almost to the level of the lower border of the stomach. A free incision in the abdominal wall through its entire thickness with drainage kept up during many weeks resulted in a complete cure. In some of the cases both tube and ovary formed the sac of the abscess and it was impossible to tell which was the starting point. In a few cases the abscess was strictly limited to an ovary, so that it looked like a liquid globe in which nothing but the shell of the ovary filled with pus was left.

*Diagnosis.*—The diagnosis of pelvic suppuration is made from the history of the case, the symptoms, and the physical signs. Traumatism, gonorrhea, and the history of a recent abortion or childbirth are of value from a suggestive standpoint. The symptoms of fever, rapid heart action and sweats are of relative value and often are entirely absent. Chills, particularly of a slight character, are frequently the only evidence the patient gives of a disturbance in her temperature—equilibrium. Pain again is only of relative value. Some patients complaining of intense pain and others of little pain. Pressure symptoms on bladder and rectum may or may not be present. In all of the cases, in my experience, a sense of lassitude and weakness is present. The combination of all or some of these symptoms associated with a tumor or exudate in the pelvis leads us to the probable diagnosis of pelvic suppuration. A hard board-like exudate may justify us in temporizing in the hope that we are dealing with a case of pelvic cellulitis. If the mass softens and gives the usual signs of fluctuation our diagnosis is established. If not, after a certain lapse of time, we are justified in resorting to the use of the aspirating needle. If it is probable that the tumor is not adherent to the vaginal roof or abdominal wall it is better to proceed at once and do a laparotomy.

*Differential Diagnosis.*—At times, it is impossible previous to operation to differentiate between simple cellulitis, parametric abscess, pyosalpinx, purulent salpingitis, complicated with cellulitis, tubo-ovarian abscess, multiple intrapelvic peritoneal collections of pus, ectopic gestation or tumors.

This difficulty will be readily understood when we remember that in the formation of parametric exudates we have in the first place to deal with a hard mass in which the pelvic organs are fixed like plums in a pudding. Exactly the same conditions may be found in cases of simple cellulitis and in cases of purulent adnexa. When we operate, in the latter cases, besides a pus tube or ovary, we find usually numerous adhesions alone or combined with parametritis to account for the hard board-like mass which presented itself to the examining finger previous to operation. As the diagnosis of parametritis or cellulitis indicates simple expectant treatment and that of intrapelvic suppuration indicates surgical treatment the necessity of at least a fairly approximate diagnosis becomes self-evident. Hence every element, subjective and objective, must be taken into account. Unless the diagnosis is positive or in cases of grave exhaustion or threatening rupture of an abscess, observation during a few days or, if necessary, weeks, should be insisted upon. Such observation is best carried out with the patient in bed—the temperature, pulse, and character of the exudate being carefully noted in the meantime.

It may be physically impossible at times to differentiate a large pus tube from a connective-tissue abscess. In the large majority of cases pus escaping from the distal end of a suppurating tube may set up an occlusive peritonitis as a result of which the fimbriated extremity of the tube becomes shut off by inflammatory adhesion of its peritoneal surfaces. This gives us the club-shaped tube, heaviest at the fimbriated end. From it own weight the tube begins to drop and bend backward. Gradually it forms a horseshoe curve on itself backward and downward. As the accumulating pus has no means of escape the tube becomes more and more distended, occupying the space between uterus and rectum. Adhesions are formed above to the intestines and omentum; in front to uterus, bladder, intestines and omentum; on the right side frequently to the appendix; behind to the rectum, and below to the vaginal roof. Under these circumstances the digital examination reveals a bulging, fluctuating tumor in the posterior vaginal vault from which the aspirating needle draws off pus, and the diagnosis of "pelvic abscess" is made. Properly speaking the diagnosis in such a case should be "prolapsed adherent pyosalpinx."

*Prognosis.*—As stated elsewhere in this paper, I am convinced that it is possible for small pus foci in the pelvis to undergo spontaneous absorption. But I will hastily add that this result is so exceptional that it is well not to take it into serious consideration. Similarly is it possible for a pus tube to discharge its contents through its proximal end into the uterine canal and so bring about a cure. This termination also is so rare that when it does occur it must rather be regarded in the nature of a fortunate accident. More often will such an abscess rupture into adjacent structures. Thus I have seen such an abscess open into the uterus in the neighborhood of the internal os; or a pus tube will form adhesions to the ovary and perforate its structure giving rise to a tubo-ovarian abscess. Or the process may be reversed. Or such a rupture may take place into the folds of the broad ligament giving the clinical picture of a parametric abscess. Or it may perforate into the general peritoneal cavity, giving rise to a rapidly fatal general peritonitis. Or it may rupture into the rectum or bladder and kill the patient from slow exhaustion. Or it may dissect up the connective tissue in the lumbar, inguinal and abdominal regions as high up as the stomach. I have seen examples of all these varieties.

*Treatment.*—There is only one legitimate method of treatment for pelvic suppuration, and that is surgical. Still the trained and careful physician may be of great service to the surgeon in the early stages of pelvic inflammation. Good medical judgment is necessary to determine upon the proper measures to pursue in the presence of pelvic exudates, previous to the stage of suppuration. Thus, under the use of rest, local refrigeration, massage and hot douches—repeated frequently and copiously—such exudates often melt away as surely as ice on a summer's day. Again, at times, judicious delay, even when the diagnosis of pelvic suppuration is suspected, often permits the pus to reach points on the surface (vaginal or abdominal) which permits of its simple management by means of incision and drainage.

Judgment and experience are necessary to determine the proper time and route for surgical intervention. Often a simple incision, followed by flushing and draining the abscess cavity, will suffice. In other cases the peritoneal cavity must be deliberately invaded and the pus-sac shelled out from its suroundings—tying it off carefully from its connections and again closing up the external wound. In some cases, particularly in pus ovaries or purulent salpingitis with few adhesions, I have succeeded in doing this through a vaginal incision. As a rule, however, I prefer to attack these tumors from above where adhesions and complications can be dealt with in a more intelligent manner.

Omitting a dozen or more cases in which I made the correct diagnosis of pelvic suppuration, but which were treated by colleagues, I have tabulated the following ninety-two cases operated by myself:*

The mortality in this series of cases was about 6½ per cent. The cases treated exclusively through the abdominal route gave the most satisfactory results. Still it would be a grave error to conclude with some surgeons that all cases should be attacked from above. To be sure a pus tube or pus ovary with slight or few adhesions to the pelvic floor is usually a clear case for laparotomy. On the other hand, a pelvic abscess bulging through the vaginal vault—no matter what its origin—is just as clearly a case for vaginal section and drainage. The selection of the route does not involve the question of the competency of the operating surgeon, for cases of pelvic suppuration ought always to be in the care of competent surgeons. The greatest nicety of adjustment of the faculty of judgment is requisite in the class of cases which seem to lie midway between a clear pyosalpinx and a distinct pelvic abscess. Nor even in the apparently simple cases of pelvic abscess is the progress of the case as satisfactory as one might think. After vaginal incision and drainage one of my patients died from an unrecognized perforation of the overdistended pus-tube into the general peritoneal cavity which had existed apparently previous to the operation. In two cases rectovaginal fistulæ, and in two others vesico-vaginal fistulæ, persisted for a time. Two cases were submitted to three successive openings through the vaginal vault without permanent benefit, and in one case such intervention required to be supplemented later by a vaginal hysterectomy. Still, in spite of these confessions my increasing experience convinces me that it is wrong to become wedded to the abdominal or vaginal route exclusively.

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* Since this paper was read I have operated 11 times for pelvic suppuration with one death. The fatal case was in a moribund woman whose uterus had been punctured during a curettage and who developed general suppurative peritonitis. Laparotomy was done in five of the cases for pyosalpinx principally and in four others for shut-off intraperitoneal abscesses. In two cases connective-tissue abscesses required both abdominal and vaginal incision with drainage.

*Ninety-three Operations for Pelvic Suppuration.*

| I. OPERATED FROM ABOVE | CASES | RECOVERED | DIED |
|---|---|---|---|
| Median incision; removal of pus focus; abdomen closed | 22 | 21 | 1 |
| Median incision; removal of pus focus; drainage. | 13 | 13 | 0 |
| Median incision; sac left; drainage. | 1 | 1 | 0 |
| Median incision; old sinus dissected out, no drainage | 1 | 1 | 0 |
| Inguinal incision and drainage (exsection of appendix) | 2 | 2 | 0 |
| Inguinal incision, followed later by lumbar incision and drainage | 1 | 1 | 0 |
| Abdominal hysterectomy | 2 | 1 | 1 |
| Total | 42 | 40 | 2 |
| **II. OPERATED FROM BELOW** | **CASES** | **RECOVERED** | **DIED** |
| Posterior colpotomy; removal of pus foci; no drainage | 6 | 6 | 0 |
| Posterior colpotomy; removal of pus foci; drainage | 3 | 3 | 0 |
| Posterior colpotomy (incision and drainage) | 23 | 22 | 1 |
| Anterior colpotomy: removal of pus sac; no drainage | 2 | 2 | 0 |
| Anterior colpotomy (incision and drainage) | 6 | 5 | 1 |
| Lateral incision and drainage | 2 | 2 | 0 |
| Lateral incision and drainage, later followed by vaginal hysterectomy | 1 | 0 | 1 |
| Vaginal hysterectomy with removal of bilateral pyosalpinx | 2 | 2 | 0 |
| Total | 45 | 42 | 3 |
| **III. OPERATED FROM ABOVE AND BELOW** | **CASES** | **RECOVERED** | **DIED** |
| Inguinal; later vaginal incision and drainage | 1 | 1 | 0 |
| Median, abdominal and posterior vaginal incisions with drainage | 2 | 1 | 1 |
| One pus tube removed from above and later the other removed from below | 1 | 1 | 0 |
| Posterior vaginal incision; later inguinal incision and drainage | 1 | 1 | 0 |
| Posterior vaginal incision; later laparotomy and removal of pus sacs on both sides; no drainage | 1 | 1 | 0 |
| Total | 6 | 5 | 1 |

In 40 laparotomies with removal of the pus-sac I had one death. In 13 of these cases, owing to the partial or complete rupture of the sac during removal of the tumor, the wound was drained. It is noteworthy that all of these cases recovered. In spite of my success with drainage I am using it less and less, and I seldom wash out the peritoneal cavity after the escape of a little pus; being satisfied that Clark is right when he maintains that the peritoneum is able to dispose of a certain amount of septic material without danger to life. In three of my laparotomies it was deemed advisable to resort to vaginal drainage. These were usually large abscesses which reached low down in the pelvis and were contained in sacs which could not be removed. One of these patients died.

In performing laparotomy for a pus tumor I try to follow a certain routine method of procedure. The patient being slightly raised in the Trendelenburg posture, the abdomen is opened in the median line by a free incision of four or more inches. The object of this is to have a clear view of the field of operation and to permit of the introduction of the entire hand. Omental adhesions are met by gentle separation with the fingers traction, or are divided between ligatures. Large gauze pads are gently insinuated behind the tumor to the lowest depth of the pelvis, the intestines being gently pushed upward toward the diaphragm. Each pad is secured with a string which is seized by a pair of forceps. With judgment and care, working very slowly, most of the tumor surface posteriorly and laterally can be walled off with pads before the second step of the operation is begun. This next step consists in introducing several fingers or the entire hand behind the uterus and searching for the point of cleavage which, with experience, will be readily found and usually in the neighborhood of the uterus. Following the surface of cleavage the tumor can be slowly and gently shelled out of its bed of adhesions until it is entirely brought out of the wound. Whether this is possible or not the poles of the tumor are seized diagonally in two long clamps which grasp the broad ligament in their bite in the shape of a V. The tumor is now cut out above the clamps. A few drops of escaping pus from the uterine end of the tumor can be wiped up and need cause no anxiety. Even this could be prevented by small forceps embracing the uterine end of the pus-tube previous to its section. The two long clamps on the broad ligament can now be replaced by a series of small clamps passed perpendicularly to the direction of the cut surface at intervals of a half inch, securing spurting vessels as they are seen and ligating them in the usual manner. Beginning at the uterine end and removing the clamps as we proceed the two surfaces of the broad ligament are brought together with a No. 2 or 3 running catgut suture, so that the oozing surface is closed up and a line of suture runs from the uterine cornua to the lateral pelvic wall. If the stump still bleeds, I make a second catgut suture run back in the opposite direction to the uterus. Very seldom will persistent points of bleeding require a few individual points of suture.

If the tumor ruptures previous to its removal the gauze pads usually catch the pus which is wiped up with extra pads as rapidly as possible. In such cases the shut off compartment—not the general peritoneal cavity— is flushed with large quantities of peroxide of hydrogen, followed by hot water and wiped thoroughly dry. The judgment of the individual operator will dictate at this stage whether drainage is necessary or not. Personally, if the amount of pus is moderate or little, and the pelvis has been walled off thoroughly from the general abdominal cavity, I prefer to close up the abdominal wound without drainage. Where this procedure is open to doubt, I sometimes fill the lumen of a thin-walled rubber drainage-tube with gauze and pass it down behind the uterus to the lowest portion of the recto-uterine cul-de-sac. Occasionally it is desirable to open up this space in the direction of the vagina and drain. Of course, in "clean" cases neither flushing of the peritoneal cavity, or drainage is thought of. Even when used, in ordinary cases, the drain is removed after forty-eight hours and the subsequent dressings consist in passing a strip of gauze down to, but not into, the peritoneal cavity.

As for the abdominal wound, I prefer to close it with catgut in three layers (1) peritoneum; (2) fascia and muscle; (3) skin. In cases in which rapid work was indicated I have at times united the entire thickness of the abdominal wall with interrupted sutures of wormgut.

In the majority of cases there is apt to be a slight rise of temperature, ranging between a half of one degree and two degrees, within the first forty-eight hours, which is due to intestinal absorption. Formerly I used to begin the use of cathartics at this time in order to start up intestinal peristalsis. It is my custom now to anticipate any chance for absorption by the early administration of fractional doses of calomel, which are given as soon as the patient has fairly emerged from the influence of the anesthetic. If necessary the calomel is followed up with Seidlitz powders, Epsom salts, or enemata, so that an evacuation of the bowels usually takes place within twenty-four or forty-eight hours after operation. An exception is made in those cases in which the intestine has been injured or in which possible thinning of the intestinal wall has occurred after the separation of extensive adhesions. I believe that one of my fatal cases resulted from such an error of judgment.

In unilateral pyosalpinx of gonorrheal origin, shall we also remove the presumably healthy opposite tube? In several cases—in one case after the lapse of three years—I was obliged to reopen the belly and remove the other tube which, in turn, had become distended with pus. Other cases have apparently remained perfectly well. In one relapsing case, I am sure that the patient became reinfected with the disease, because I had the husband's confession that he had acquired a fresh attack of the disease. So that, from the present I feel disposed to remove only the diseased and distended tube, leaving the opposite side for future consideration.

As to vaginal hysterectomy in bilateral pelvic suppuration, I confess that my attitude is lukewarm. To be sure, I have been carried with the tide and done the operation in several patients suffering from bilateral adnexal suppurative disease; but I cannot help feeling that it is not good surgery to remove a healthy uterus because the adnexa happen to be diseased. My repugnance is still further increased by the knowledge that I have seen able operators remove the uterus per vaginam and fail in attempting to remove one of the pus sacs—the very condition, it seems to me, for which the operation was done.

Operation for pelvic suppuration is always a life-saving procedure. While the patient's life is saved in all cases and permanent restoration to a normal state of health occurs in the large majority, the ultimate result in a few is not so satisfactory. Indeed, I know of no condition which so taxes the patience and ingenuity of the surgeon as an imperfect recovery after operation for pelvic suppuration. The following cases exemplify nearly all of my distressing experiences in this direction: In one case laparotomized successfully for bilateral gonorrheal pyosalpinx I was obliged, three years later, to obliberate the uterine cavity with superheated steam because of persistent purulent endometritis. I confess that such an experience is an argument in favor of removing uterus plus adnexa. In another gonorrheal abscess, vaginal incision and drainage was done. This had to be repeated several weeks later. After a few weeks more I did a vaginal section and removed the offending pus sac. The patient, after months of suffering, left the hospital in disgust, and I believe was finally hysterectomized elsewhere. A case of puerperal parametric abscess was twice opened and drained, per vagina, under anesthesia. After being up and about the ward for two weeks and free from fever during nearly four weeks she was discharged as cured. Within twenty-four hours she was taken with severe pelvic pains and high fever. I believe she was operated later in some other hospital. One of my patients who was successfully operated for a suppurating abdominopelvic tract (left after a former laparotomy done elsewhere) became a mental wreck and had to be sent to an asylum. Four cases of fecal fistulæ got well spontaneously and two cases of vesicovaginal fistulæ required repeated subsequent operations before a cure was effected. Abdominal or vaginal fistulæ persisted in a number of cases for a long time but ultimately healed spontaneously. A few ventral herniæ were left in cases requiring drainage at the time of operation. Some of these were cured by a secondary operation.

From a rather careful study of my experiences with pelvic suppuration I am tempted to lay down the following rules:

1. To prevent suppuration examinations in patients suffering from any variety of pelvic inflammation should be made gently and infrequently.

2. The use of sounds and cervical dilators, under ordinary circumstances, should be restricted to the operating room where the parts can be thoroughly prepared and the operator, nurse, and instruments thoroughly asepticized.

3. After a gonorrheal pus tube has been removed the woman must be warned of the possibility of an invasion of the opposite side if she takes the chance of reinfection from the diseased male.

4. Abscesses, irrespective of their origin, when "pointing" above or below, should be treated by simple incision and drainage.

5. Sacculated abscesses presenting the characteristics of intraperitoneal tumors should be treated by laparotomy, without unnecessary delay.

112 East Sixty-first Street

## MEDICAL PROGRESS.

### MEDICINE.

**Cure for Sea-Sickness.**—It has been observed that the unpleasant sensations when on board of a ship, come on usually as the vessel sinks down into the trough of the sea. The same sensation is felt in an elevator as it starts on its downward trip. A simple remedy to overcome this trouble is recommended by O. DORNBLUTH (Münch. med. Woch., April 7, 1903). Just as the vessel sinks one should take a long breath and hold it for a few moments. This inflates the abdomen and fixes the diaphragm, and if continued for some time is effectual in keeping away the unpleasant nauseous sensations. As a preliminary treatment he also recommends the daily evening administration for a week previous to embarkation, of 15 to 40 grains of sodium bromide. The diet and the time of taking food should not vary from that to which the individual is accustomed.

**The Value of Saline Infusions.**—The value of saline infusions has been demonstrated by many observers in a most varied assortment of diseases, and an immense number of clinical reports have been published. A new series of investigations has lately been reported by W. ERCKLENTZ (Zeitsch. f. klin. Med., Vol. 48, No. 3), which are concerned with the question of the elimination of toxic substances from the diseased organism. A number of rabbits were given subcutaneous injections of the minimal lethal doses of aniline, strychnine, arsenic, ricin, and cantharidin. In each case as soon as the symptoms appeared, a saline infusion was given in the crural vein, with the usual precautions. It was distinctly shown that it is possible to hasten the elimination of the poison by the administration of saline infusions, and this is undoubtedly due to the increased diureses which almost invariably follows this procedure. The early application of the remedy may lessen the effects of the poison by merely diluting the quantity absorbed, but consideration should be given to the fact that some toxic substances may be diluted and eliminated much more readily than others, and also that the degree of their union with the living cell varies greatly. Owing to the latter, they may be given up to the surrounding fluid medium with ease or difficulty, and therefore, although an infusion may produce a diuresis, this may not be of any value as far as eliminating any of the toxins is concerned. The behavior of the kidneys in this procedure must also be considered, the author found that if a poison can be eliminated by flushing the kidneys, as it were, its effect on the renal tissues may have a marked influence on their excretory powers. This was plainly shown in the experiments with aniline and arsenic. Both are blood poisons and may cause congestion and hemorrhage by clot formation in the capillary network. After arsenic it was not possible to bring on a diuresis. In the case of aniline, however, a marked diuresis may take place before the poison has been able to do any damage to the kidneys, and in this way it may be eliminated before the organism as a whole has been affected. A series of clinical observations of the employment of saline infusions in a variety of diseases is also appended. The results were uniformly good, especially in certain cases of severe anemia, the only unpleasant after-effect noted being a rise of temperature, preceded be a severe chill.

**Metallic Systolic Râles.**—Mention has frequently been made of the systolic râle due to displacement of an alveolar exudate, in the neighborhood of the heart by the action of that organ. Such râles may be heard quite distinctly when the patient's breath is held, and are usually described as crepitant and subcrepitant. F. MARIANI (Gazz. Osped., April 5, 1903) describes a special form of this râle which he characterizes as metallic. This he heard in a patient affected with pulmonary tuberculosis and having a cavity which communicated with a small bronchus, and pleuropericardial adhesions. He thus analyzes the phenomenon: With every cardiac systole a decrease in the heart's volume took place; and owing to the pleuropericardial adhesions, the heart pulled upon the lung in systole and widened the cavity; thus causing aspiration of air, which coming in contact with the fluid in the cavity produced the râles. The metallic timbre of the râles is supposed to be due to the compact pulmonary walls. Cessation of the former occurred when the cavity was partially emptied by coughing and expectoration.

**Effect of Renal Massage.**—Much has been written of latter years concerning renal massage in cases of nephroptosis; the end sought through this method of treatment being reduction of renal congestion, which is believed to play an important part in the pathogenesis of the affection, and also to be responsible for much of the pain experienced. Opinions as to the value of massage of the kidney seem to be pretty evenly divided; brilliant results having been attained in some cases, while a deleterious effect has been seen in others. The clinical and experimental experience of P. MORANO (Gazz. Osped., April 5, 1903) has been altogether unfavorable to the measure. A patient whose general condition was perfectly normal save for a prolapsed right kidney was given daily treatment for six days by gently massaging the kidney between the two hands; with the result that the urine gradually decreased till but 200 c.c. was voided in twenty-four hours, red cells, white cells, albúmen and casts appeared, and the urine regained its former normal condition only after suspension of the treatment. Similar effects were produced in ten rabbits subjected to the same treatment, and microscopical examination revealed inflammatory lesions of varying intensity in the kidneys treated by massage.

**Treatment of Morphinism.**—The usual method observed in treating this condition is by a gradual withdrawal of the drug and substitution of other hypnotics and stimulants. M. S. Halleck (Med. Rec., April 11, 1903) has had very good success by the complete withdrawal of all morphine at once and the use of a combination of strychnine sulphate gr. $^1/_{60}$, hyoscine hydrobromate gr. $^1/_{100}$ and codeine sulphate gr. $^1/_4$. This may be given once or twice daily and the hyoscine should be cut out as soon as possible. The strychnine stimulates the various functions while the codeine and hyoscine relieve the nausea, restlessness, insomnia and pain. No other medication is usually necessary and a recovery in from two to three weeks is frequently seen. The desire for the drug seems to be destroyed.

**Diseases of the Liver.**—In a review of some of the recent investigations which have been made into liver diseases, H. D. Rolleston (Practitioner, March, 1903) shows that a large number of cases of biliary, or Hanot's, cirrhosis have been treated surgically. Cholecystostomy was done to drain the gall-bladder and gall-ducts and bacterial infection was thus gotten rid of. The fistula was kept open for varying periods from ten days to three months; in some instances, the bile which at first was infected with micro-organisms, subsequently became sterile. Although it is possible that some of these cases were simply conditions of chronic catarrhal inflammation of the larger bile ducts, yet the majority of them had the clinical characteristics described by Hanot. In regard to portal cirrhosis Bouchard insists that besides the increased tension in the portal area and the toxemic condition of the blood, an arterial change is an important factor in the production of hemorrhages in cirrhosis of the liver. When cirrhosis is progressive there is a tendency for the production of multiple nevi on the skin which may bleed and the hemorrhage is arterial. Hemorrhage from the pharynx frequently occurs from nevi on the mucous membrane in cases of cirrhosis. Steinhaus has investigated the condition of the pancreas in twelve cases of portal cirrhosis and in all but one he found a chronic interstitial pancreatitis with considerable destruction of the gland tissue, but the islands of Langerhans were not affected. The last observation has been confirmed by others and it appears that when glycosuria or diabetes occur in this association, the pancreas and not the liver must be responsible. The fibrosis of the pancreas may be even more marked than that of the liver and it is now thought by many that the liver in cirrhosis shares in the morbid changes of a disease which in reality attacks, independently and at the same time, the gastrointerstinal glands, the spleen, the pancreas and the liver. Recently 105 cases were reported in which operation had been done for the relief of ascites in cirrhosis of the liver. Thomson in a paper on the prognosis and treatment of cases of ascites in the course of alcoholic cirrhosis of the liver draws a distinction between the cases in which ascites is directly dependent on the cirrhosis and those cases of cirrhosis in which ascites is present but due to some other factor such as chronic peritonitis. He practically comes to the conclusion that the operation is likely to be of benefit only in those cases where the ascites is not dependent upon a cirrhosis. The success, he thinks, depends more upon the obliteration of the cavity by adhesions.

**Peritonitis in Typhoid Fever.**—The development of peritonitis in typhoid fever without perforation is a moderately frequent complication. A very complete discussion of the subject is published by J. L. Yates (Am. Med., May 2, 1903), who also reports two additional cases, one of which was caused by the *Bacillus typhosus*, and the other simulated acute appendicitis. From our knowledge of the subject at the present day, it is probable that non-perforative peritonitis results from the migration of bacteria through an intestinal wall which is relatively but slightly abnormal. Meteorism thus predisposes to infection of the peritoneal cavity and by decreasing the normal peritoneal absorption furnishes a secondary cause for peritonitis. An hematogenous origin of peritonitis is possible in typhoid. The typhoid bacillus is the usual cause and the inception of such a peritonitis is clinically indistinguishable from the so-called signs of perforation, and the symptoms in both are due to peritoneal inflammation. Thrombi, and among them those composed of agglutinated red blood corpuscles, may lead to hemorrhages into the wall of the intestine and the resulting changes favor the transmission of bacteria into the peritoneal cavity. Infarction of the spleen may have a similar thrombotic causation, but simple splenic infarction is probably not a cause of peritonitis.

**Body Weight in Pulmonary Tuberculosis.**—A very interesting study of the body-weights in 1,200 cases of pulmonary consumption at the Adirondack Cottage Sanitarium has been made by L. Brown (Am. Med., April 25, 1903). The universal opinion at the present day assigns the loss in weight to the reduced assimilation and fever which is caused by toxin absorption in the tuberculous area. It is not the amount eaten but the amount assimilated that is of value to the consumptive. Carefully regulated exercise and rest are of more importance as regards the body-weight than forced muscular activity, which is always injurious. Excessive gain in weight may be injurious. Gain is usually first evident on the chest, next upon the abdomen in men and on the hips in women. A quick, constant loss indicates that the patient is rapidly losing ground, and a gain constant over two months indicates probable improvement. A gain of a few pounds is of little value in prognosis. As a general thing, the patients who gain over twenty pounds do better than those who gain less. Sunshine and dryness are not necessary factors of gain in weight. Cold weather stimulates assimilation and gain in weight more than warm.

**The Value of Drugs in the Glycosuria of Diabetes.**—An exhaustive study of the literature of this subject has been made by M. Kaufmann (Zeitsch. f. klin. Med., Vol. 48, Nos. 3 to 6), in which he discusses the various drugs recommended, with especial reference to their power of reducing the glycosuria. Other effects, such as may prove of value in the attendant complications, are not considered. The remedies may be classified under the following headings: Sedatives, antifermentatives, ferments and organic extracts, vegetable preparations, inorganic, and special modern preparations. The results taken together seem to show that the majority of the preparations advocated have apparently little or no influence in diminishing the glycosuria. These include chloral hydrate, piperazin, iodine preparations, arsenic, quinine, methyl hydrochinon, linseed tea, alkalies, lime salts, uranium salts, ammonium salts, preparations of pancreas and liver, cocaine, pilocarpin and ergotin. Among those of some value but not to be recommended on account of their unfavorable effect on the organism and their toxic qualities after prolonged administration, are antipyrin, carbolic acid, and corrosive sublimate. The following are usually without effect, but may be given in exceptional cases—potassium bromide and the Carlsbad waters, the latter of course referring to the so-called home cures. The value of the "cure" itself at the resort, is of undoubted benefit in numerous cases. Drugs to which a marked influence may be ascribed, are opium, salicylic acid, and their derivatives, salol and aspirin, and, finally, in a lesser degree, the extract of jambul. The indications for these three remedies vary. Opium should never be considered in mild cases, for here, regulation of the diet is the most effective measure. In severe cases, however, opium has been found to be the most reliable remedy, especially in the presence of complications such as neuralgias, neuritis, amblyopias, etc. A strict diet is also better borne when opium is administered. The salicylates and their preparations can only be considered in cases with a slight glycosuria or those which are on the border line of a more severe type. The results seem to be particularly good in cases where even with a strict diet, small traces of sugar persist. Instead of further restricting the dietary of such patients, it has been found that small doses of salicylic acid are very effectual in removing these traces. It also appears that when the glycosuria is no longer present, a carbohydrate diet may be more readily instituted without untoward results, if salicylic acid is administered at the same time. Among the various preparations aspirin is to be preferred to the salicylate of soda, as not producing any unpleasant after-effects. The indications for giving the extract of jambul are less marked. It may also be of value in cases where a carbohydrate is about to be given, less sugar appearing in the urine if the drug is given at the same time. The results are not to be depended on and' there is no means of determining which cases will be benefited, except by actual trial. As no unpleasant after-effects follow the ingestion of the remedy, it may be tried in all the milder cases. Summing up all the evidence collected, it seems that the dietetic treatment is the most important factor in the handling of all cases of diabetes.

**Ochriasis.**—To the majority of people, pallor is synonymous with anemia; and the presence of orchriasis too often leads to an erroneous diagnosis of anemia, writes M. Labbé (Gaz. Méd. Nantes, April 11, 1903), who emphasizes the importance of examination of the blood in all cases of pallor. The author cites numerous conditions which may give rise to ochriasis, among which may be mentioned: (1) The emotion experienced by some patients when undergoing examination at the hands of the physician; their temporary pallor subsiding as they become more reassured; (2) a thick skin, or one poor in blood-vessels; (3) insufficient outdoor air and exercise, giving rise to insufficient peripheral circulation though the quantity and quality of the blood may be normal; (4) Ill-defined myxedema, in which the blood-vessels are narrowed by pressure upon them from the gelatiniform edema and sclerosis of the subcutaneous tissues. The resulting pallor may give rise to a faulty diagnosis of anemia. Though pallor may be due to the mechanical influences mentioned, thyroid insufficiency may, in itself, produce anemia, hence the importance of blood examinations; (5) The scrofluous or lymphatic diathesis, with the thickening of the integument upon face and extremities, may produce pallor for the same mechanical reasons obtaining in myxedema; though examination may show the blood to be normal; (6) aortic insufficiency with peripheral vasoconstriction gives rise to a pallor which at first sight suggests anemia; (7) peripheral vasoconstriction is, in the majority of cases, responsible for the pallor seen in Bright's disease; though anemia, secondary to the nephritis may occur. (8) Finally, in a certain proportion of cases, a condition of oligohemia may be responsible for pallor; the quality of the blood being normal, though the quantity is insufficient to thoroughly irrigate the integument. Such a condition is sometimes seen in emaciated, cachectic, tuberculous patients; the red cells and hemoglobin being in normal proportion, yet autopsy showing the viscera to be positively exsanguinated. The author holds that in such cases there is an actual "atrophy" of the blood. He describes a class of cases in which oligohemia, and its accompanying pallor, are due to insufficient cardiovascular development; necropsy showing the size of the heart and blood-vessels to be disproportionately small compared to the body mass.

**The Effect of Morphine on the Secretion of Gastric Juice.**—The uncertainty which has existed regarding this problem has been expressed by statements, directly contradictory, of a number of observers. Another contribution to the question as to whether this drug increases or diminishes the secretion of gastric juice has lately been published by H. Holsti (Zeitsch. für klin. Med., Vol. 49, No. 1), and was called forth by the observation that a patient who had been given a hypodermic of morphine for an attack of abdominal pain, showed some hours later when his stomach was emptied by siphonage, a marked diminution in the amount of fluid secured and the latter also disclosed a lessened degree of acidity. The experiments were then extended to a number of patients, who were given morphine subcutaneously in doses of 1-1.5 cgm. with the Ewald test breakfast. In a number of cases the drug was also given on an empty stomach. The patients were all afflicted with some functional gastric disturbance. The results in the different cases varied greatly. The most constant point noted was the checking of the gastric secretion, which was not only lessened in quantity, but more viscid and less acid. This in a few hours' time is followed by an increased secretion. In a number of cases, however, this reaction was missed when larger doses had been given and the author thinks it probable that here the drug may have a stimulating effect in small, and an inhibiting effect in larger doses. The cases where the drug had been given on an empty stomach, great variations were also seen and no definite conclusions could be drawn. The effect of administering the drug continuously, 4-6 mg. t.i.d. was found to produce a diminution of the acidity of the stomach contents and, in some cases, the hydrochloric acid was entirely absent. Another noteworthy fact was, that during this time there was often found a large amount of fluid of a low degree of acidity, which probably points to disturbances in gastric motility. The author believes that the unfavorable effects produced by morphine are due rather to the latter cause than to any influence on the gastric secretion.

**The Red-Light Treatment of Smallpox.**—Although in vogue for many years, the theory of the red-light treatment was further elaborated by Finsen only a few years ago, when he urged its use on the ground that the exclusion of the chemical rays caused an absence of the severe inflammation which is most often seen in those parts of the body exposed to the light. In a recent article, J. F. Schamburg (Jour. Am. Med. Assoc., May 2, 1903) voices certain objections to this theory. As smallpox is essentially a cold weather disease, when there is but little direct sunlight, he does not believe that exposure to diffuse winter daylight could produce any effect on the skin. The predilection for the face and extremities which the eruption often displays is due to the greater vascularity. It has also been noted that if irritation of the skin takes place after the appearance of the variolus eruption, it does not increase the number of lesions nor otherwise unfavorably influence the eruption. If Finsen's theory were correct, the negro ought to suffer much less severely than the white man, as he has been given by nature the best possible protection against the injurious influence of the actinic rays of the sun. In discussing the question of pitting, the author believes that it is less determined by any special treatment than by the vaccinal condition of the patient and the severity of the disease. At the present time even an attack in the unvaccinated may leave only mild scars. In determining the value of any remedy, conclusions should only be drawn from its employment in unvaccinated cases, and the prevailing type of epidemic should always be considered. In Denmark, Sweden and Norway, very favorable reports of the use of the red-light treatment have been published. The author's experience is limited to two cases in young adults who were exposed on the third day, before the lesion had become vesicular. One case died and the other recovered but with most disfiguring scars.

**The Shape of the Chest in Tuberculosis.**—The statement has been made that the chest in this disease instead of being flat, as ordinarily believed, is in fact round. This observation has been further substantiated by the same author, W. HUTCHINSON (Jour. Am. Med. Assoc., May 2, 1903). He claims that the antero-posterior diameter, instead of being diminished relatively to the transverse, is, on the contrary, increased, so that the term "flat-chested," as applied to the consumptive, is really a misnomer. A large number of observations have been made and the author has found that the typical tuberculous chest has an average index of about 80, nearly 10 degrees above the normal. This type precedes the disease and is an abnormal persistence of the fetal, infantile and child type of the chest. He recommends that the chests of growing boys and girls be measured at stated intervals, and wherever the index is found distinctly higher than that normal for their age, active measures should be taken to remedy the defect. This includes all exercises which involve wide swinging use and play of the arm, chest and shoulder group of muscles.

**Increased Blood Counts Due to High Altitudes.**—It has been generally accepted that altitude produces an increase in the number of red blood cells. J. WEINZIRL and C. E. MAGNUSSON (Jour. Am. Med. Assoc., May 2, 1903) have made some further observations which support their original view, that high altitudes do not produce any increase in the number of red cells. In the new experiments both human subjects and rabbits were examined and it was found that the increase in all cases was only temporary and that the blood count after a lapse of several weeks again became normal. It is believed that the temporary increase is due to the change in the temperature factor, and not to the diminished barometric pressure, as is generally held.

**Infection by Bacillus Coli Communis.**—Recently considerable work has been done to differentiate the various causes of continued fever. It is only within the past year that the paratyphoid bacillus has been recognized, its action understood and its tendency to produce a fever similar to that of typhoid radically proved. A. JACOBI (Med. Rec., April 25, 1903) reports a case which resembled typhoid very closely so far as clinical symptoms were concerned, but the blood was examined for plasmodia twice, for Widal four times, and the scrapings of spots as well as the urine for the *Bacillus typhosus*, with negative results. The urine was then examined for the colon bacillus and a large number found. The urine examination showed the pressure of an inflammatory condition in the kidneys. In a week's time the temperature began to fall gradually until the sixteenth day, when the patient developed a pneumonia, and died two days later. It is urged by the author that many cases of so-called auto-intoxication are really cases of infection by the colon bacillus and a careful examination of the urine would reveal them.

**Cardioptosis.**—This term designates a condition in which the heart assumes a lower position and is at the same time more movable than normally. It is not yet generally recognized but has been described by several authors. M. EINHORN (Med. Rec., April 25, 1903) during the last three months has examined all his private patients for this condition and has found twenty-two cases of cardioptosis or a percentage of 2.4. In regard to the etiology, emaciation, enteroptosis and neurasthenia seem to play a part but they alone are not sufficient to cause cardioptosis. It is more frequent in men than in women, while enteroptosis is much more frequent in the female sex. The wearing of a corset is apt to support rather than push the heart downward. Nervous disturbances of the heart, as palpitation, attacks of vertigo, and occasionally inability to lie on the left side are the principal symptoms in these cases, but they of course may be associated with various other conditions. The relative as well as the absolute dulness usually begins about one rib lower than normally. The relative dulness generally begins at about the fourth and the absolute dulness at the fifth rib, near the left border of the sternum, in a case of cardioptosis. The mobility of the apex beat should not be more than three centimeters, but it is frequently found in cases of cardioptosis that the distance of the apex beat from the point where it was felt plainest in the dorsal position, to the point where it was found in the left lateral position was three to five centimeters. In the right lateral position the apex beat often disappeared altogether. He lays especial stress upon the fact that in nearly half the cases a general enteroptosis was found and in practically all the cases an hepatoptosis of varying degrees was present. Cardioptosis does not endanger life and the subjective symptoms caused by it may be alleviated if not cured by a general hygienic and tonic treatment. Local support can, of course, be of very little benefit except perhaps for a moral effect.

**Value of Diazo-reaction in Typhoid Fever.**—During the year 1902 the Board of Health of New York has been performing the diazo test on all specimens of urine sent to it by physicians for that purpose, and J. S. BILLINGS (N. Y. Med. Jour., April 18, 1903) has given the results of this test and estimates its value in the diagnosis of typhoid fever. The test is made in the following manner: Equal parts of the suspected urine and the following solution (saturated solution of sulphanilic acid in five per cent. hydrochloric acid, 40 parts; 0.5 per cent. solution of sodium nitrite, 1 part) are mixed well and shaken. On the addition of a few drops of ammonia a brilliant rose pink color should appear if the case is one of typhoid fever. The twelve-hour sediment is also characteristic, consisting of a dirty-gray lower layer and a narrower dark olive-green upper layer. It has been found that the reaction is more constant in typhoid than almost any other sign or symptom, not even excepting the Widal reaction in the blood. It is most marked between the fourth and tenth days, being found in the great majority of cases by the fourth day and in not a few on the third. The more intense the infection the earlier the appearance of the reaction. It begins to fade by the tenth day and may be entirely absent by the third week. In only five cases was the diazo negative when the Widal was positive. Of these, the examination in one was made on the fourth day (too early), in three after three weeks (too late) and in one on the tenth. The reaction is also present at times in certain other diseases, *e.g.*, pulmonary tuberculosis, scarlatina, measles, etc., but these conditions can usually be easily distinguished clinically from typhoid fever. He concludes that although it is not absolutely pathognomonic of typhoid, yet the diazo is even more constantly present in that disease than the Widal. Its absence, therefore, when it should be present, viz., between the fourth and tenth days, is of considerable value in making a negative diagnosis. In a majority of cases the diazo is present at least forty-eight hours earlier in the urine than the Widal in the blood. "Doubtful reactions" are of very slight significance.

**The Effect of Antiseptics on the Intestinal Bacteria.**—A method by which the number of bacteria in the feces could be determined by mechanical weighing was devised by J. Strassburger some time ago and he has now applied the same system in studying the effect of the commonly employed antiseptics on the bacteria in the intestine (Zeitsch. für klin. Med., Vol. 49, No. 6). He found that naphthalin had no effect in diminishing the number of bacteria. Salicyclic acid in solution, as an addition to milk or meat, slightly diminished the number of bacteria. These tests were made in the human subject, others were made in a dog in which an artificial anus had been made above the cecum. Thymol was followed by a slight diminution in the numbers at the beginning of the administration. Naphthol and calomel were accompanied by an increase in the numbers, which may be explained by the diarrhea caused by these agents. Tannocol was found to cause a marked diminution in the numbers. But the act which interferes most with the increase of bacteria is the normal function of the intestine. The timely absorption of thoroughly digested materials deprives the bacteria of the proper culture medium and for this reason, reducing the amount of nourishment has a marked effect in reducing the bacteria. It is possible therefore that remedies which injure the intestinal wall in any way, such as the majority of the antiseptics and the cathartics, instead of reducing the bacteria, actually increase their numbers, whereas reducing the amount of food and giving it in an easily digestible form has a more marked effect in diminishing the development.

**A Case of Rupture of the Aorta.**—This condition is undoubtedly to be considered among the rarest in medical literature. E. Wasastjerna (Zeitsch. für klin. Med., Vol. 49, No. 4) reports this occurrence as having taken place in a thirteen-year-old boy, who had been apparently in the best of health. While skating he was suddenly taken ill with cardiac pain, dyspnea, palpitation and dizziness. These symptoms continued intermittently and two days later the boy expired very suddenly. Autopsy showed a large amount of coagulated blood in the pericardium. The heart was hypertrophied, and the aorta was distended and its wall was very thin. At the level of the semilunar valves was an irregular rupture. Further examination showed a marked narrowing of the aorta just below the point where the left subclavian artery was given off, the lumen of which admitted a probe only a millimeter in diameter. The development of a complete collateral circulation, however, provided the boy with the means of obtaining a strong bodily development, but at the expense of a moderate cardiac hypertrophy and dilation. No symptoms were at any time observed, until the particular overexertion connected with skating produced a dissecting form of aneurism with subsequent rupture.

**Influence of Ichthyol on the Elimination of Sulphur in Tuberculosis Patients.**—After reviewing the work of other investigators along this line, G. Radice (Gazz. Osped., April 20, 1903) gives the results of his personal study of three tuberculous cases in which ichthyol was administered, as follows: (1) The ingestion of ichthyol induces increased elimination of sulphur (urinary and fecal) and this increase corresponds to the amount of ichthyol introduced; so that by estimating the amount of sulphur eliminated, the amount of ichthyol absorbed or circulating may be determined; (2) the increase in urinary sulphur is evenly divided between the neutral and acid sulphur; (3) no relation between the sulphur from the ichthyol and the acid sulphur compounds can be established; (4) elimination of the "ichthyolic" sulphur may be prolonged, especially after large doses of the medicament, until the eleventh day after suspension of the treatment or even longer; (5) the increased fecal sulphur is not derived solely from the ichthyol, but also from the organism.

**False Whooping Cough.**—The differential diagnosis between false and true whooping cough is discussed by R. Saint-Philippe (Jour. de Méd. de Bordeaux, April 26, 1903), who states that the two affections have but two features in common, *i.e.*, the initial catarrh, and cough. In his experience, the catarrhal stage is not so intense in true whooping cough, and the cough is more frankly spasmodic in that disease; but that which, to his mind, is most characteristic of the false is, that the cough sets in earlier; either three or four days after the onset of catarrh or simultaneously with it; and it subsides within eight to fifteen days after its development; while in true pertussis, cough rarely appears before the eighth day and lasts at least four weeks. He finds, moreover, that false pertussis yields rapidly to antispasmodics, it is most frequently met with during epidemics of grip, it affects adults equally with children, a previous attack of whooping cough does not protect against it, the "whoop" is less marked and the cough is not accompanied with expectoration, epistaxis or, as a rule, with vomiting; neither are there edema of the face, lingual ulcerations, loss of appetite, nor, above all, the tachycardia which is so characteristic of true pertussis.

## OBSTETRICS AND GYNECOLOGY.

**Prolapsus Uteri.**—After condemning other well-known methods of correcting this surgical condition, E. S. Bishop (Lancet, March 14, 1903), describes an operation of suspension in the following terms: The protrusion is reduced and the patient placed in the extreme Trendelenburg position and then the abdomen is opened in the median line. As soon as the intestines have gravitated toward the diaphragm out of the pelvis, two threads are passed through the broad ligament, one on either side of the uterus, enclosing the tube, and the round ligament. The ends of these threads are tied, and by them as tractors the fundus of the organ is drawn forward. A special sound is passed up the vagina by an assistant, and made to press the posterior fornix upward so as to render it prominent. On either side a stout silk thread is passed vertically through the substance of the fornix, but avoiding the mucous lining so that each protruding end is a half-inch distance from the other and the whole loop is from one-half to three-quarters of an inch from the cervix. The fornix is now applied to the sacrum at a spot directly opposite, free of vessels, nerves and the ureter, and well outside the rectum, where a needle carrying this suture is applied deeply, as to embrace the periosteum covering the bone. It is brought out a full half-inch above its entrance. Before applying this suture, a narrow strip of peritoneum is removed from that portion of the fornix which lies in its grip, so as to bare the connective tissue beneath. This is repeated on the opposite side, and the sutures are tied and their ends cut short. Sometimes the position of the rectum will permit only a single fixation, which should then be more certain in its position, as regards the uterus, and somewhat broader. The new ligament or ligaments are now formed, and the cervix hangs in its normal position from the sacrum by that part of the vagina which lies between it and the sutures. The traction threads through the broad ligaments are now removed. The round ligaments must then be shortened by Olshausen's method, but it is important not to shorten them to their fullest extent, thus permitting some play, so that the uterus may rise with the filling of the bladder, as it does normally. The abdominal wall is then closed in its usual position, and when the operation succeeds, the uterus is very nearly in its normal position. As a rule, it is necessary to supplement this operation with a perineorrhaphy, which Bishop carries out two weeks after the other operation.

**The Hematomole of Breus.**—The following conclusions are offered on the subject of hematomole of the type described by Breus by F. Taussig (Arch. f. Gyn., B. 68, H. 2): (1) This mole may be classed, according to the form of the hematoma, into two groups, namely, into those with isolated and individual, and those with grouped broad based hematomata. The difference rests upon the variations in form of the placenta. (2) The comparative bloodlessness of the chorium, as well as the absence of the primary heart in the embryo are not features of this mole, because both of these conditions were found in several of his cases. (3) The decidua is sometimes necrotic, sometimes healthy, and then has normal vessels without thrombosis. For this reason this hematoma mole cannot be explained as a change in the decidua. (4) The syncytium is still present after the death of the fetus, and shows notable increase at the point where fresh blood is found. Langerhans' layer does not take part in this increase, and is often totally absent. (5) The epithelium of the amnion may also increase after the death of the fluid. (6) No definite proof was obtained by this author during his observations that the chorionic villi increased after the death of the fetus. In two cases there was an edematous enlargement of some of the active tissue of the villi, which was similar to the condition found in mole of the bladder. (7) The embryo shows definite external and internal malformations, but, nevertheless, none which are typical and capable of being the cause of death in the second month. The fact that it is shorter than the degree of development in its organs would indicate is explicable through processes of shrinking. (8) His final conclusion as to the development of hematomole is the following: After the death of the fetus, the membranes, the amniotic fluid and the whole envelope increase in volume. There really arises a secondary hydramnios ovum. The ovum is retained; the amniotic fluid is gradually absorbed; the membranes of the ovum fold themselves irregularly and become filled with blood, and create a broad base or scattered hematoma.

## PHYSIOLOGY.

**New Researches in the Antitoxic Ions.**—A series of investigations made by J. Loeb and W. Gies (Pflüger's Archiv f. Physiol., Vol. 93, Nos. 5 and 6) confirm the earlier observations made by Loeb, that every solution of an electrolyte of a certain concentration inhibits the development of the eggs of Fundulus, and kills them, but that these toxic effects are in general either wholly or partly antagonized by the addition of a second electrolyte. The investigation also confirms the fact discovered by Loeb that the degree of power possessed by the antitoxic electrolyte is largely determined by the valency of its kation, and that the antitoxic efficiency of the bivalent kations is very much greater than that of the monovalent kations. It is improbable that the antitoxic power of salts with kations of higher valency, is determined by the free hydrogen ions contained in certain of these solutions. Solutions of non-conductors, as urea, cane-sugar, glycerin and alcohol, have no antitoxic action on the solution of an electrolyte, with the apparent exception of those cases in which the non-conductor (*e.g.*, cane-sugar) may diminish the concentration of the toxic ions by the formation of compounds not easily dissociable (*e.g.*, saccharites). With reference to the principles underlying the antagonistic relations between two electrolytes and the particular significance of the valency and the electric charges of the ions, one is referred to the earlier researches of Loeb who showed that one may accept either of two different hypotheses. In the first place, it is possible that the metals operate by entering into union with certain protoplasmic constituents, and thus alter the properties of living substance. In the second place, it is possible that the ions, by virtue perhaps of their electrical field, operate on certain colloidal solutions in the cells, and thus affect the condition of the protoplasm, without entering into chemical union with any of the constituents whose properties they alter. W. Koch has recently shown that solutions (possibly colloidal) of lecithin are precipitated by the addition of small quantities of an electrolyte with bivalent kation, but not by an electrolyte of univalent kation. Since lecithin is contained in protoplasm, the possibility arises that the antagonistic action of the ions is in part to be attributed to the influence of the electrolytes on the physical condition of the lipoids in the cells.

**The Staining of Living Blood-Platelets.**—The origin of the blood-platelets has puzzled physiologists for a long time. A new method of studying these peculiar bodies while they are still living, has enabled G. Puchberger (Virchow's Archiv, Vol. 171, No. 2), to throw considerable light on this subject. In studying living human blood-platelets stained with brilliant cresylene blue, he noticed after the lapse of ten to fifteen minutes, the separation of a hyaline substance which, in the form of a cylinder, is inseparably attached to the similarly circumscribed stained substance of the blood-platelet. The nuclei of the lymphocytes and the granules of the leucocytes are similarly stained, while the nuclei of the multinuclear and the large mononuclear leucocytes are stained differently. In leucemia there are observed markedly hypertrophic forms of blood-platelets, which sometimes attain the size of lymphocytes, and undergo in general the same changes as those described above. Similar transformations appear to take place in the lymphocytes, whose nucleus separates from the protoplasm. The assertion that the chromatic body of the blood-platelet corresponds to a nucleus has not, until this investigation, been susceptible of proof.

**Alcohol as Antidote for Poisonous Albuminoids.**—The curative action of large doses of alcohol in snake-poisoning has been known for a long time, according to W. N. Clemm (Pflüger's Archiv f. Physiol., Vol. 93, Nos. 7 and 8), but no satisfactory explanation has been forthcoming. The hypotheses as to the action of alcohol are manifold. The toxic albumoses are precipitated by alcohol but not coagulated; the globulins are coagulated as well as precipitated. (1) How can the victim of an adder's bite tolerate a quantity of alcohol which would prove fatal to a normal individual? The alcohol absorbed into the blood precipitates and renders innocuous the snake-venom. Probably in the healthy body no more alcohol is absorbed at any one time than can be oxidized in the body, and probably the threatened death following a poisoned bite affects the regulatory centers in such a way as to allow the absorption of a large quantity of alcohol, and thus present to the treacherous foe an antagonist which, under other circumstances, would be an equally deadly enemy to the organism. (2) It is possible that alcohol affects the nervous centers in such a way, as to render them incapable of attack by the snake-venoms. (3) It is possible, as Richard Neumeister has suggested, that an alcohol-dilution as weak as one per cent. in the blood, may, without causing precipitation or coagulation, affect the molecular constitution of the venom globulins in such a manner as to destroy their toxicity with respect to the nervous centers. (4) Finally, alcohol may play the rôle of a hypertonic substance from the very beginning of its inhibition, inasmuch as, by disturbing the osmotic equilibrium between the blood and the intestinal lumen, it creates an effort toward the restoration of this equilibrium by the passage of water from the blood into the intestine, with the result that the poisoned blood is thickened and in this way can exert a more powerful influence over the toxic albumins. The above hypotheses are concerned particularly with the toxic globulins; the albumoses which operate locally and more slowly, are equally subject to the action of alcohol, but are, at any rate, responsive to local treatment and are to be fought accordingly. Some of the infectious bacteria produce toxic globulins, others produce toxalbumoses. For these diseases, produced by these bacteria, alcohol would theoretically appear to be the antidote. The alcoholic treatment can be of service only in a recent infection; it is contraindicated in a secondary infection. If the exciting factors of disease have obtained a permanent foothold in the system the alcoholic treatment is of doubtful value. Alcohol is of service in auto-intoxications; also in febrile diseases often less in its capacity as a cardiac stimulant than in its rôle of protecting the heart against the toxins of the disease.

**The Knock-Out Blow on the Point of the Jaw.**—Inasmuch as all boxing contests, which terminate speedily, are as a rule ended by this character of coup de grace, the physiology of it is of great interest. A man struck with any degree of force upon the mental area of the jaw, although he may be in perfect physical condition, instantly collapses and falls to the ground. The attitude assumed in recovery, which may be instantaneous or delayed some minutes, is most characteristic. He squirms about, raises his head and rolls his eyes in an attempt to locate himself. He tries to get on his side and elbow. He endeavors to rise upon his hands and knees. If he regains his feet, he staggers like a drunken man and should he proceed to reopen hostilities, he is usually promptly "put out" by his adversary. The blow is practically never fatal; the heart's action is never unduly accelerated, the pulse and respiration are normal; the pupils are normal; there is no headache, no sweats, no cold extremities, no pallor—none of the ordinary signs of shock or concussion. JAMES G. DUNCANSON, (Brit. Med. Jour., April 4, 1903) believes the condition to be due entirely to a shaking up of the endolymph in the semicircular canals. When the blow is administered, there is a violent, overtwisting of the head, which is held in its anteroposterior position by muscles which, compared with those inflicting the blow, are small and puny. The result is that the head flies around with a jerk and the fluid in the canals is subjected to a greater disturbance than by any other trauma. There is little reason to doubt that this is the interesting pathology of the well-known but little understood coup de grace.

## NEUROLOGY AND PSYCHIATRY.

**Paresis and Pregnancy.**—An interesting paper dealing with the mutual influence of paresis and pregnancy has for its author E. RÉGIS (Jour. de Méd. de Bordeaux, March 29, 1903). He has found that a temporary improvement is the rule, during pregnancy, among those afflicted with general paralysis, and he cites the case of a woman who, in a period of three years, became twice pregnant, and in whom delirium subsided entirely during both pregnancies. Further, in his experience, pregnancy runs a very favorable course in such patients, and labor, as a rule, is extremely easy; so much so, that the patient has, in some instances, given birth to her child without being aware of it. Contrary to what might be expected, the author has found that the offspring of such a parent are, as a rule, fairly healthy and develop normally; the condition influencing the child's health being the syphilis underlying paresis, rather than that pathological state itself; and the more remote the birth from the time of the mother's syphilitic infection, the greater the child's chance for life and health. Thus, according to Régis, it has been not infrequently observed that more healthy children are born to a paretic woman in the advanced stages than earlier in the disease; and this apparently paradoxical fact he attributes to the influence of the syphilitic taint upon the fetus in the early stages of paresis.

**Fibrinopurulent Cerebrospinal Meningitis from Pfeiffer's Bacillus.**—To the fourteen recorded cases of meningitis due to Pfeiffer's bacillus are added three which came under the observation of G. MYA (Gazz. Osped., March 1, 1903). In all, the meningitis was associated with inflammation of other serous membranes. In the first case, bilateral bronchopneumonia and left fibrinopurulent pleuritis were present; in the second, purulent arthritis preceded the meningitis by some days; and in the third, meningitis followed bronchopneumonia and unilateral otitis. Bacteriological examination of the cerebrospinal and pleuritic fluids revealed the presence of Pfeiffer's bacillus, and the author maintains that this bacillus must be reckoned with in the production of fibrinopurulent inflammations of serous membranes as much as the diplococcus of Fränkel and the meningococcus of Weichselbaum. That in all three cases the disease occurred in nurslings, Mya believes to be an indication of a predisposition in the very young to this special form of cerebrospinal meningitis. In the two cases which came to autopsy, the meningitis was found to be of an extremely grave form; the fibrinopurulent exudate being very abundant, both in the encephalon and in the spinal medulla; and the meningeal inflammation was accompanied by serious inflammatory lesions of the cerebral tissue.

## THERAPEUTICS.

**Methods which Render Drugs more Palatable.**—The use of the capsule and compressed tablet has obviated the nauseating effect of many drugs. There are, however, many simple methods which may be made use of and which prove to be important factors in the management of the diseases of childhood and make the drugs much more more acceptable to the adult. S. E. EARP (N. Y. Med. Jour., April 11, 1903) advises the "castor oil sandwich" which is made by putting a small quantity of glycerin in the bottom of the glass, then pouring on the castor oil and covering both with half an ounce of sherry wine. This is to be taken at a single draught. The best way to give quinine is to add one grain of tannic acid to each three grains of quinine and giving them in a vehicle of syrup of tolu. In case copaiba and turpentine are not given in gelatin capsule, an emulsion flavored with gaultheria comes next in order. For chloral hydrate peppermint water is perhaps better than cinnamon. Equal parts of peppermint water and simple syrup make the best vehicle for sodium salicylate. A few grains of table salt placed upon the tongue will produce a copious flow of saliva and then if swallowed with medicine which has an objectionable taste it may in a measure be disguised. Care should be taken, however, that no chemical incompatibility exists. Medicines should not be taken into the mouth when the secretions are inactive or the membranes dry and parched. Simple water or lemon juice will obviate a part of this trouble. A combination of syrup of red raspberry and glycerin makes an unusually palatable vehicle.

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## THE RESIGNATION OF DR. M'LANE.

THE announcement of the resignation of Dr. J. W. McLane as Dean of the College of Physicians and Surgeons is received with regret. For over thirty-five years Dr. McLane has given not only his labors but himself to the work of developing the finest possibilities that the city could afford in the line of medical education.

His inherent powers of generalship, combined with his charm of manner, have seemed to make his slightest wish creative; but those who have been associated with him have known that he gave labor, thought, and personal attention to all the details of the growth of the many new departments which the College has developed.

That he himself has been the inspiration of much of the progress is heartily granted by all his colleagues. The Sloane Maternity, which affords the first opportunity in the world for the study of obstetrics, will always remain a monument to the far-sighted wisdom of Dr. McLane, as well as to the philanthropy of its donors.

His associates feel that his interest and counsel will not be withdrawn by his resignation, and that he must ever continue to be held by all who have worked with him as the practical founder of the College of Physicians and Surgeons as it now stands in its present magnificent development.

## MENTAL SYMPTOMS AND NEURASTHENIA.

IN recent years the general practitioner has come to realize how serious may be the condition known as neurasthenia. It is well known too that in the early stages the affection may be aborted if its beginnings are properly noted, and thus a long period of mental and nervous depression, sometimes proceeding even to nervous prostration, prevented. The difficulty in this has been the comparative latency, or, at least, lack of suspiciousness, of the early symptoms of the developing condition and the failure to recognize danger signals of importance. In recent years various mental symptoms and habits have come to be recognized as due to neurotic conditions and to neurasthenia and psychasthenia in varying degrees. These affections are practically always due to a deterioration of the physical condition of the individual and consequently proper treatment with a rearrangement of the habits of the patient in the matter of work, exercise, rest, sleep, outdoor air and food, may bring about an alteration of metabolism that will prevent the further development of neurasthenic symptoms.

In recent years the mental symptoms associated with neurotic conditions which have attracted most attention are the various tics, peculiar habits, obsessions and the like. When scarcely more than a decade ago Gilles de la Tourette published his book on convulsive tics these conditions had been very little studied and had received nothing like the attention that the subject merited. Various repeated motions, winking, grimaces, wrinkling of the forehead, peculiar movements of the hands, habitual movements of the fingers, supposed previously to be scarcely more than bad habits, proved, on careful observation, to be commonly the result of rundown conditions, affecting the nervous system, lessening inhibition, and so giving the liability to slight motor explosions of various kinds with resultant unnecessary and almost involuntary movements. It was noted that these were peculiarly liable to affect neurotic individuals with a certain amount of family heredity as regards nervous conditions, and were usually worse at times, when overwork, loss of sleep and appetite, or emotional stress made the patient's general condition less robust and his power of inhibition less capable than it had been previously.

Besides these physical habits it was found that such neurotic patients were also liable to be affected by mental peculiarities and habitual states of various kinds. A special form of these was the so-called phobias or fears to do certain things.

Many neurotic individuals are unable to walk in a narrow street where the perspective causes the upper stories of the buildings apparently to come together in the distance and which consequently gives them the feeling of being shut in. This is known as claustrophobia. Many persons cannot walk in an open wide space where the absence of buildings gives them no fixed object on which to settle their vision. A sense of tremor comes over them while crossing a square, or even a very wide street. This is called agoraphobia, from the Greek for market-place. Other patients cannot sit in the front row of a gallery because of the fear that they may be tempted to throw themselves over. Many of these conditions may seem unimportant to a general practitioner, but they will be found not infrequently associated with neurasthenic conditions and will be much more annoying to the patients about the time that neurasthenia is gaining a hold upon the nervous systems. Aggravations of such symptoms are often a sign that the physical condition is running down and that an attack of severe neurasthenia may be looked for unless the patient can be persuaded to a change of life and habits without delay.

In a recent number of the *Journal of Nervous and Mental Disease,* Dr. S. Weir Mitchell, in a paper read before the Philadelphia Neurological Society, calls attention to a special set of symptoms that he calls "reversals of habitual motions," which he has found symptomatic of neurotic conditions in individuals whose mental power of inhibition usually impaired by heredity has been still further affected by severe emotional strains or by overwork. Some of these symptoms, as for instance, the habit of reading books beginning at the end first might seem without importance since so many readers, especially of the feminine gender, are apt to follow it to some extent, at least as a routine practice. As a matter of fact, however, in this case, the habit had become so completely an obsession, had gained such an absolute mastery that she was unable to read in any other way. Other patients mentioned had acquired the tendency to put their stockings on their hands and their gloves on their feet and of putting their clothes on in reversed order, putting even their shirts for instance, first over the feet.

Most of these symptoms might seem of trivial significance and yet it is the careful observation of such minor signs that indicate the beginnings of more serious nervous trouble and even furnish warnings of the care that must be exercised with regard to such patients and the attention their cases may demand. Needless to say, symptoms like these develop only in individuals who are of less vigorous mental caliber than others, but they must constitute the care of the physician and even in obscure forms may be recognized by the general practitioner if he will but realize the guides to investigation that recent careful work by specialists in these lines has provided for him.

## REFORM IN CHARITIES.

THE medical fraternity have not been the only gainers in the systematic and complete regeneration of the methods of charity administration under Homer Folks. Under most trying conditions he has been able to work many much-needed reforms, and the encomiums in the recent report of the City Club are well merited.

In their report, made public this week, the second of a series by this club devoted to the principal city departments, the work of renovation now in process of successful performance by the new Charity Commissioner is well outlined.

In the introductory paragraph of this report they say: "The work of the Department of Charities, in constantly caring for more than eight thousand of the city's destitute, appeals to the popular mind. The slightest hint of abuses in the Department has always served to call forth public protest. The people will not countenance neglect and cruelty in the charitable institutions of the city. But serious abuses have existed in the past, and popular ignorance of the conditions has permitted them to continue. For such abuses publicity is the certain remedy. Publicity as to all branches of the city government is necessary to attain best results. The citizen has a right to know how public officers are spending his money and serving his interests. The worst administration will be better if the people know what it is doing; the best administration will be stimulated by popular approval or by popular criticism based upon popular knowledge. But the city's business has become so vast and complicated that the citizen unaided cannot follow intelligently the work of even one department. This pamphlet is an attempt to present the facts which enable the citizen to understand the work of the Department of Charities."

And the pamphlet does it well. One of the earliest abuses subject to the condemnation of the Commissioner, and even at the present time, unfortunately, too often honored in the breach, was that of having disorderly and alcoholic helpers about the various institutions. This disgraceful condition of affairs theoretically has disappeared, in that it is now more of a surreptitious performance rather than a to-be-winked-at weakness, and the increase in the efficiency of the help, particularly in the hospital service, is marked.

Complaints of the loss of money, of destroyed property of the inmates of the hospitals and asylums on the island, are fortunately becoming rarer, since a much more rigorous system of dealing with the offenders is practised. Embezzlement of funds has been stopped, we hope, and patients' property is better dealt with and restored.

There are a number of features in this report worthy of special consideration. We hope to be able to return to this subject in future editorial mention, and here desire to add the special thanks of the medical profession for the practical and efficient improvements made by Commissioner Folks.

### THE MOAN OF THE STRAGGLER.

With impersonal directness and invidious innuendo the *Medical Record* has stated that the first fruits of the Madrid Congress, that the Medical News imported to this country so carefully and with such characteristic promptness, were sour.

The Medical News made every effort to get the fullest reports possible in the shortest space of time, and succeeded to our own and our readers' satisfaction. But the *Medical Record*, to put it mildly, implies that these reports are lacking in authenticity, and unblushingly invites its readers to wait until its "proceedings of the Congress are published."

That the reading of these reports gave the *Medical Record* pain is evident, or its affable editor would never have permitted the following description of our report: "There does not appear in it a single item that could not have been obtained before the meeting was held and even the few that are offered either lack directness of statement or are not correctly represented as regards actual occurrences."

The fact that the Medical News published abstracts of almost one hundred of the papers prepared for the Congress in Madrid, as contrasted with the meager half dozen given by the *Medical Record* the same week, is evidently the cause of the latter's distress. This becomes the more striking when the boastful editorial of their issue of May 2, announcing a "full cabled report of the Congress" is measured in the light of their performance.

But thus far the symptoms of the *Medical Record* are the only ones that bear out this implication of our grapes being sour. None of our other readers have been at all indisposed. In fact, some who attended the Congress and have returned have done us the honor to congratulate us upon our prompt and comprehensive reports, and have marveled how we did it.

The *Medical Record* is doubtless also wondering.

Possibly the caterpillar wonders how the bird flies.

## ECHOES AND NEWS.

### NEW YORK.

**Appointment of Dr. Vogel.**—Dr. Karl M. Vogel has received an appointment as assistant in the Department of Pathology at Columbia University. Dr. Vogel has just completed a three-years' hospital interneship at St. Luke's.

**The Lying-in Hospital.**—Representatives of most of the hospitals in the city of New York visited the new Lying-in Hospital, at Second avenue and Seventeenth street, last Tuesday, to inspect the plant as it is after fourteen months' use. The Lying-in Hospital was constructed after a careful study of the most modern hospitals in all the great cities, and care was taken to avoid the defects which had developed in previous buildings. The result has been eminently satisfactory. Only one of the three wards, each containing sixty-two beds, has been open during the last year, the means of the hospital not permitting the use of the other two wards. More than 7,300 destitute women have applied for care in confinement, an average of over 450 a month. All of the hospital plant, except the two wards, is in use. Fifty nurses from all parts of the country are now being trained in obstetrics in the hospital with a number of students and graduate pupils.

**Report of Bellevue and Allied Institutions.**—A report of the trustees of Bellevue, and allied hospitals, for the quarter ending December 31, 1902, has been made public. The number of patients admitted during the three months was 7,721, and including 79 births, and 812 patients remaining in the hospitals on October 1, 1902, the total number of cases treated was 8,612. Of these 7,105 were transferred and discharged, 599 died, and 908 were still undergoing treatment at the end of the quarter. On suggestion of a committee of the house staff, a plan for the better regulation of the ambulance and admission service at Bellevue was put into effect in November. An important change in the medical service was made, when, "in order to relieve the attending physicians and surgeons, who had difficulty in completing their rounds, a supplementary visitation of the outlying wards was assigned to the assistant attending physicians and surgeons." The principal fact of interest in connection with Gouverneur Hospital was the establishment on December 16 of a dispensary for the treatment of trachoma. Between that date and the end of the month, 1,412 old and 976 new cases, a total of 2,388, were treated, thus showing the need of such a dispensary. There was great overcrowding at Harlem Hospital, and the dispensary building was uncomfortable and unsanitary. An adjoining house has been leased, and it is believed that the next report will show an improved condition of affairs. Improvements at Fordham Hospital and the Emergency Hospital are noted. Altogether the report shows signs of much healthy progressive work on the part of the Trustees.

**Resignation of Dr. McLane.**—Dr. J. W. McLane has resigned as "Dean of College of Physicians and Surgeons." As Dr. McLane for the past thirty-five years has been most active in the upbuilding of the college, his loss will be keenly felt. It is due to his efforts perhaps more than to any other one man that the P. & S. has been placed in the front rank of the medical schools of this country.

**Reorganization of Department of Therapeutics at Columbia.**—Beginning with the fall of 1903 the department of materia medica and therapeutics will be reorganized and extended under the supervision of Professor C. A. Herter, newly appointed. New laboratories are being fitted up by the trustees to be devoted to the teaching of experimental pharmacology, and of the principles of materia medica and pharmacy. Drs. Smith Ely Jelliffe and Walter A. Bastedo have been appointed to the new department and other appointments are expected.

**Mismanagement in Smallpox.**—The Rochester Common Council committee on the management of the recent smallpox epidemic asserts that Commissioner Gilman was responsible for the delay in erecting the new municipal hospital, and, inferentially, responsibility is placed on Mayor Rodenbeck.

## PHILADELPHIA.

**Additional Milk Inspectors Appointed.**—At the solicitation of Director Martin four additional city milk inspectors have been appointed. This increase serves to double the force. Additional efforts to secure a purer milk supply will provide for a raised standard of milk and for serving the poor with milk twice a day during the summer.

**Hospitals Crowded.**—Many of the hospitals in the city are at present overcrowded, chiefly due to the large number of typhoid fever cases. An unusual number of cases of appendicitis are also under treatment at the present time. One physician attributes many of the latter cases to the eating of fruit, much of which is over-ripe.

**Reunion of Medical Class.**—The twenty-fifth anniversary of the graduation of the Class of 1878, University of Pennsylvania Medical Department, was held at the Bellevue, May 27. This class holds a reunion every five years. Of the 127 graduates, 76 are now in active practice, and 30 attended this dinner. The class contains many prominent members of the profession, among those in this city being John B. Deaver, Richard H. Harte, James H. Lloyd, and Boardman Reed.

**Ectopic Testicle in the Perineum.**—This case, which is believed to illustrate a very unusual form of ectopic testicle, was reported at the Pediatric Society, May 12, by Dr. John H. Gibbon. The patient was a child one and one-half years old. The testicle by an ingenious method was restored to the scrotum, and the result is very satisfactory. The testicle was small and undeveloped, but its removal was not considered justifiable.

**New Site Chosen for College of Physicians.**—The College of Physicians, of Philadelphia, the oldest and most conservative medical body in this country, has decided after many years of occupation of its present quarters at Thirteenth and Locust streets, to move elsewhere. A lot 130 by 180 feet on the northwest corner of Twenty-second and Chestnut streets has been purchased by the managers for $80,000, and a suitable building will soon be erected. This action is the outcome of several months' debate among the members as to the advisability of enlarging the old building at Thirteenth and Locust streets or purchasing a site on which to erect a new building.

**Jefferson Medical College Commencement.**—The seventy-eighth annual commencement of Jefferson Medical College was held May 28, the address to the graduates being delivered by the Hon. Hampton L. Carson, Attorney-General of Pennsylvania. The members of the class numbered 166. The degree of Doctor of Laws was conferred upon Professor J. von Mikulicz-Radecki, of Breslau, Germany, who was introduced by Dr. W. W. Keen. At the annual meeting of the Alumni Association, held the previous evening, Dr. W. Joseph Hearn was elected president.

**Peritonitis Due to Strangulated Meckel's Diverticulum.**—This case was also reported by Dr. Gibbon. The patient was a girl of ten years, who was seen after she had been sick one week with progressive symptoms of intestinal obstruction. Operation revealed a strangulated Meckel's diverticulum that was causing intestinal obstruction. The diverticulum was two inches in length and of the same caliber as the bowel. It was located at a point two feet from the ileocecal valve. The patient, with the exception of a few days' disturbance due to a small collection of pus in the pelvis, made a good recovery. Dr. Gibbon in closing said that the treatment of cases of obstruction is the removal of the mechanical cause of the condition. He emphasized the folly of giving laxatives or purgatives in these cases. If the case is not to be operated upon, feed the patient by the rectum.

**Orbital Cellulitis Following Scarlatina.**—Two cases of this uncommon complication were reported to the County Medical Society May 27 by Dr. Burton K. Chance. The course in each was rapid and terminated fatally, one child dying on the seventh day, after the eyeball had become necrotic. Incisions, which were made deeply into the orbital tissues before death, revealed the presence of a slightly sanguineous fluid. After death the condition was found to be one of serous infiltration, no pus being present. The second case was similar. Incisions into the tissues were made earlier, but the child died in convulsions on the eighth day. No infection of the surrounding sinuses was found in either case. The first patient had had measles one year before, and the other had been perfectly healthy. The etiology of the cellulitis was discussed at some length. Treatment of these cases should consist of early drainage by many incisions.

**The Treatment of Uterine Cancer.**—In a paper upon this subject, read before the County Medical Society May 27, Dr. George Erety Shoemaker said there was among the profession an unwarranted pessimism regarding the effects of operation in cases of cancer of the uterus. Cancer of the fundus is quite amenable to treatment, and even epithelioma of the cervix can be cured. In the latter class of cases the new growth should be thoroughly seared by the cautery before the operation proper is begun. Dr. Shoemaker believes that recurrence is less apt to take place if this preliminary precaution be observed. He states that the tedious intra-abdominal dissecting operations are giving way to the shorter one of vaginal hysterectomy. In advanced cases he prefers to begin by the vaginal route and then open the abdomen. In early cases of cancer of the cervix or even of the fundus the abdominal route offers no advantages over the vaginal. In early cases of the cervix his primary mortality has been two per cent. As to recurrence, and here is where the profession is too pessimistic, Dr. Shoemaker cited a number of cases that are well at periods varying from two to seven years after operation for cancer of the cervix and four years after operation for cancer of the body of the uterus. His statistics, as compared with those generally given, are markedly encouraging. In closing, Dr. Shoemaker particularly emphasized the preliminary use of the cautery. In some cases it is advisable to do this two weeks before performing hysterectomy. By this technic good results were secured in a supposedly inoperable case.

## CHICAGO.

**The Personal Equation in the Medical Profession.**—President Andrew Sloane Draper, at the commencement exercises of the College of Physicians and Surgeons of the University of Illinois, held May 27, at the Studebaker Theater, gave some advice to young men standing on the threshold of a medical career. President Draper is not a member of the medical profession, but his address was delivered from the view-point of one who has seen much and has had large opportunity to know the better public sentiment concerning it. Among other things he said: "In view of all the things which modern scientific knowledge enables one to know with certainty, there is too much uncertainty, too much hideous blundering in medical practice. To trifle with human life in defiance of well-known scientific truths, to proceed upon mere guess when the facts essential to competent and exact treatment may be easily ascertained, is an offence against decency and should be made an offence against law which would land one in jail. The medical profession stands in exceptionally close relations to its clientele. The doctor knows the innermost secrets of our lives. He scarcely waits at the door as he pushes his way into the innermost chambers of our homes. He is admitted to the most sacred recesses of human feeling and trusted with the hopes and fears, the loves and perils of family life. The man who offers himself for such relationship, while destitute of moral genuineness, is a dangerous factor in society. Are you looking for wealth? If you are, the very fact that you are looking for it makes it probable you will not find it. If your aim is commercial, you should have entered commercial life. A commercialist is out of his latitude in a profession. Selfishness defeats itself in professional life. One who withholds relief he may easily give, one who takes advantage of the misfortunes of the poor to harass or crush them is a professional highwayman. I remember hearing an eminent surgeon testify in a damage case. He was asked what his charge had been. The reply showed it had been exceedingly small. Asked if that was his usual rate, he said, 'No, but he was a poor man, and I made a poor man's bill.' I know where another poor man in the deepest sorrow went into a physician's office for help for his sick wife, and this was said to him in so many words: 'You say your wife is sick, and you want me to go to see her. If you have the money in your pocket to pay me, I will do it; if not, I will not.' One of these doctors was a glory, and the other a disgrace to the profession. The men of reputation, the busy men with the best practice, are the generous, whole-souled men of the profession. They have come to be noblemen in the profession because of their sympathy and generosity."

**Professional Ethics.**—"There is a common public feeling that there is a system of medical professional ethics, shaped by and for the benefit of the little fellows of the profession, and aimed against the charlatans, the camp-followers and hangers-on of the profession, which too often comes in the way of the claims of the individual patient upon the individual physician. The labor organization and the professional organization are each all right, but it never must be forgotten that they exist for very different ends. Uniformity of fees, division of territory, increase of business by artifice, supporting the brethren of the common bond, whether right or wrong, are the last things an honest and reasonably capable professional man wants. For one, I regret the passing of the family doctor. I regret it not more because of inconvenience to the public than because of the unfortunate influence upon the profession. A great collection of doctors' offices numbering scores, or hundreds, in one building in the business quarter of a great city is on all-fours with what I conceive to be the normal work and essential spirit of the medical profession."

**Commercialism in System.**—"It must adopt the forms, beget the methods and breed the spirit of commercialism. It succeeds that system of medical specialization which in reasonable measure is well enough, but which, carried to extremes, rests upon no sufficient formalism, limits the character, growth, and professional development of the individual physician, imposes needless inconvenience and cost upon the public without compensatory advantages, and works a marked change in the feelings of attachment between family and medical adviser, which have been the charm and main regard of a physician's life-work. A doctor seeking political preferment makes a sorry spectacle. Down in York State they used to say that when a doctor got into the legislature it was nine to one he was corrupt, and that he had got so in the habit of charging a dollar or two a visit in his little practice, that he forgot to raise the price when he was selling franchises instead of physic. Summon the angels of light and truth and mercy to guide you as you move into a noble profession to win the only true success through being useful to mankind."

The graduating class numbered 230 members, of whom twenty-five were women. The valedictory was won by Joseph Johnston Sherril. The Alumni banqueted the class at the Auditorium in the evening.

**Osteopathy Bill Vetoed by Governor Yates.**—Gov. Yates has vetoed the bill which provides that: "Licenses to practice osteopathy shall be granted by the State Board of Health to all applicants of good moral character who pass the regular examination of such Board in anatomy, histology, physiology, obstetrics, gynecology, pathology, urinalysis, toxicology, hygiene and dietetics, diagnosis, theory and practice of osteopathy, and present to said Board a diploma from a regular college of osteopathy maintaining the standard of the associated colleges of osteopathy in its requirements for matriculation and graduation, and requiring personal attendance for at least four terms of five months each.

**Plan for Pure Milk.**—That the plans of the new milk commission, working under the auspices of the Children's Hospital Society for the standardization of Chicago milk will become effective there can be no doubt, as a day or two ago six large milk dealers applied to the commission for its official approval of their supply. The members of the permanent milk commission, which will endeavor to place pure milk within reach of the poorest people during the coming warm weather, will be appointed by the Executive Board of the Children's Hospital Society. The commission will consist of the same persons who composed the milk committee. They are Prof. E. O. Jordan, Prof. W. J. Fraser, Dr. Adolph Gehrmann, Dr. I. A. Abt, Dr. C. E. Peck, Dr. M. J. Crosby, Dr. H. B. Burler, Wm. B. Wanzer, James Cheeseman, John Jacobson, E. M. Barton, R. J. Wilbur, Mrs. Geo. E. Moulton, Mrs. Geo. W. Plummer, Ira Nelson Morris, and Ira J. Mix. The milk commission will approve two grades of milk which will be approximately pure. These grades will be known as certified milk and inspected milk. The former will be the more nearly pure. The milk committee already has drawn up the standard requirements for these pure grades of milk, and farmers who wish the approval of the commission for their dairy product must live up to the rules. The following hospitals have acceded to all conditions required, and have announced themselves as members of the Children's Hospital Society: St. Luke's Home for Cripples, Maurice Porter, Michael Reese, Union of Englewood, Mercy, North Side Maternity and Children's, Wesley, Presbyterian and Hahnemann.

**The Weight Wave of Menstruation.**—Dr. Wm. T. Belfield read a paper on this subject before the Chicago Medical Society May 20, 1903. (1) During several days preceding the menstrual flow there occurs a progressive increase in the weight of a healthy young woman, often comprising from 2½ to 5 pounds, which may be from 1½ to 5 per cent. of her usual weight. The climax of this gain is immediately followed by a rapid loss of a large part (perhaps a half) of this increase, and then a more gradual loss extending over several days of the remainder. (2) The menstrual flow begins during the rapid loss of weight mentioned, its appearance often, though not always, coinciding with the beginning of the loss in weight. The flow continues with the less rapid loss which follows during the next few days, terminating about when the woman's weight regains its premenstrual level. (3) The premenstrual gain in weight is due to diminished excretion, especially of water. The rapid loss of weight which accompanies the flow is due to rapid excretion, notably of water. (4) This menstrual weight wave was absent in a woman fifty-nine years old, who had not menstruated for twelve years. (5) The menstrual weight wave was observed in two subjects of irregular menstruation, at periods when the flow was scanty or absent. The paper was illustrated with charts, giving a graphic portrayal of the menstrual weight wave, transferred from the daily weight records of two young women.

**Obituary.**—Dr. Florence Hunt, a prominent woman physician of this city, expired at St. Mary's Hospital, Milwaukee, May 27, where she underwent an operation. She was forty-five years old, and was graduated twenty years ago from the Chicago Woman's Medical College.

## CANADA.

**Montreal Doctors in the Pulpits.**—Sunday, May 17, was "pulpit" Sunday for Montreal physicians, as upon that day many of the prominent physicians of that city occupied different city church pulpits and preached sermons on that soul-stirring topic, tuberculosis. The arrangement was part of the plan of campaign recently inaugurated in Montreal to spread a knowledge of the ravages of the dread disease in that city. One of the notable addresses was that from Professor Adami, who occupied the pulpit of the Church of the Messiah, and in dealing with the death-rate in Montreal, which was in a large measure due to diseases of a preventable nature, showed by comparison with London, England, that Montreal had indeed much need for enlightenment regarding the prophylaxis of disease. While London had a death rate of 17.3 per thousand, Montreal could lay claim to one of 29.1 per thousand. Dr. Adami said that this large death rate was due in the main to three causes, the high infant mortality, pneumonia, which was a very dangerous disease in Montreal, and tuberculosis. From the latter there were about 1,000 deaths per year, and in general one-seventh of all the deaths in that city was from tuberculosis.

**Ontario Board of Health.**—During the past week the Ontario Board of Health met in annual session in Toronto and discussed particularly the report of Dr. Bryce (the Secretary of the Board), scarlet fever, and vaccination. There is at present before the Ontario legislature a bill seeking to abolish the clause regarding compulsory vaccination, and this bill came in for very strong condemnation at the hands of the board. It is not, however, considered that the legislature will enact any such unwise legislation, as it is considered that there will not be found more than three members to support it. Referring to the smallpox outbreak throughout the province during the past winter, Dr. Bryce's report made special reference to the town of Galt, where the most extensive outbreak had been. In that town there had been 142 cases with 11 deaths, the disease having originated in a case coming from Cleveland. For the past twenty-one years isolation and vaccination had been the chief weapons used in combating smallpox. From 1882 to 1900 there were 135 outbreaks, 1,085 cases and 170 deaths. In 1901 there were 199 outbreaks, 2,500 cases and 12 deaths. In 1902 there were 1,800 cases. During the first four months of the present year scarlet fever had raged in a very virulent form occasioning no less than 350 deaths throughout the province.

**The Union of Trinity Medical College and Trinity University Complete.**—On May 28 Convocation was held at Trinity University for the purpose of conferring degrees in medicine. In the absence of Chancellor Robinson, who is sojourning in Europe, Provost Maclem, the Vice-Chancellor, presided, and in addressing the gathering of students and friends of Trinity, stated that the union between the University and Trinity Medical College was now complete. Trinity Medical College has surrendered her charter, ceases to be a private corporation and hereafter will be the Medical Department of Trinity University. On behalf of the newly inaugurated medical department, Drs. Grasett, Bingham and Sheard expressed their pleasure and satisfaction with the new order of things.

**The Lady Minto Cottage Hospital Fund.**—During the sojourn of the Vice-Regal party in Toronto, the Countess of Minto took the opportunity of bringing to the attention of a meeting of the citizens her scheme for raising an endowment fund for her Cottage Hospitals in the Canadian Northwest. So successful was Her Excellency that $51,000 was subscribed at the meeting, nearly one-half of the total sum required to finance the entire scheme.

The following well-known Toronto gentlemen donated $10,000 each toward the Fund: Senator George A. Cox, Mr. D. D. Mann, Mr. William McKenzie and Mr. Chester D. Massey.

**Personals.**—Dr. George W. Badgerow, of Toronto, who for the past three years has been pursuing postgraduate work in London, has been appointed to the clinical staff of the Golden Square Hospital for Diseases of the Nose and Throat, London.

Dr. Edmund G. Weir, late house surgeon of the Toronto General Hospital, has just been successful in passing his examinations for the double qualifications of M.R.C.S. and L.R.C.P. at London. He will remain in the old country for some time yet pursuing postgraduate work.

Dr. Colin C. Campbell, Toronto, has been appointed House Surgeon in the Royal London Ophthalmic Hospital, England.

Dr. Allen Baines, of Toronto, has been elected Vice-President of the American Pediatric Society.

Dr. Mikulicz, the eminent German surgeon, was the guest during the past week of Dr. Shepherd, of Montreal, and during his stay in that city operated on a case of umbilical hernia, at the General Hospital, before a large gathering of Montreal physicians and surgeons and the graduating class of the Medical Faculty of McGill University.

## GENERAL.

**Female Doctors.**—Some ninety female doctors are at present practising in London.

**Indian Territory Medical Association.**—This association held its twenty-third annual session at South McAlester June 2 and 3. A very interesting program was offered.

**Tuberculosis Crusade in New Haven.**—The New Haven Medical Association purposes to carry on an active crusade against tuberculosis in their city by giving a series of lectures and by the distribution of literature. Dr. S. A. Knopf, of New York, will give the opening lecture.

**Summer Courses in Berlin.**—The next cycle of the Association of Berlin Docents' summer courses will begin on September 28, 1903, and continue until October 24, 1903.

**Vaccination in Alsace-Lorraine.**—Vaccination is obligatory in Alsace-Lorraine and is performed gratuitously by physicians appointed by the government; though vaccination by the family physician is permitted provided a certificate from him stating the result of the operation is presented to the proper authorities. The fact that in a population of 1,719,470 but 12 cases of smallpox and one death from that disease occurred between the years 1897 and 1901 is attributed to this regulation.

**International Congress of Hygiene.**—The following Committee of Organization for the United States, for the Eleventh International Congress of Hygiene and Demography, to be held in Brussels, September 2 to 8, 1903, has been appointed, at the request of the Belgian government, by the State Department: Dr. E. A. de Schweinitz, The Columbian University, Washington, D. C.; Dr. A. B. Richardson, The Columbian University, Washington, D. C.; Dr. John Marshall, University of Pennsylvania, Philadelphia, Pa.; Dr. Harrington, Prof. of Hygiene, Harvard University, Boston, Mass.

The Committee desires to secure the cooperation of all of those in this country who are engaged in hygienic work, both in attendance at the meeting in Brussels, and in sending papers to the Congress. The Congress will be divided into two sections: (1) Hygiene; (2) Demography. The subjects which will be considered are the relation of bacteria and parasites to hygiene, the hygiene of foods, the treatment and prevention of communicable diseases, etc. The important subject in its various phases of the communicability of tuberculosis will be discussed by prominent men.

The fee for membership is 25 francs, which may be sent to the Secretary-General, M. le Dr. Felix Pulzeys, Rue Forgeur, l. à Liège, Belgium. Those proposing to attend or send papers will please notify E. A. de Schweinitz, Washington, D. C.

**Dr. Poore Resigns.**—Dr. G. V. Poore, the eminent sanitarian and physician, has severed his connection with the University College and Hospital of London, on account of ill health. Dr. Poore will restrict his labors to a limited private practice.

**Typhoid at Leland Stanford, Jr., University.**—A typical epidemic of typhoid fever has been in progress at Palo Alto, Cal., since April 1 and is just beginning to show signs of abatement. Like most outbreaks of the kind it seems to have begun through the carelessness of the attendants on a patient whose disease it would seem had not been diagnosticated. This case occurred in the family of a Portuguese dairyman living near a stream in which the milk pails and pans were washed and which supplied the water used for cooking purposes in several families. The excreta from the sickroom was thrown out behind the house and left there to be washed into the brook during the first rain that happened to come along. Consequently the milk from this dairy became directly contaminated and in one month there were 150 cases of typhoid in the town.

**Site for King Edward's Sanatorium.**—An open plateau of 150 acres near Haslemere, England, has been purchased from Lord Egmont, upon which a structure will be erected to be known as "King Edward VII.'s Sanatorium." The site is covered by a dense forest of fir trees, lies 450 feet above sea level, and commands a fine view of South Downs. The water supply is derived from impounded springs a mile to the north, and is said to be chemically and bacteriologically pure. A careful study of sanatoria in Germany and Switzerland has been made with a view to combining the best elements there presented in the plans for the new institution.

**Philippine Opium Traffic.**—The bill prepared by the Philippine Commission for the regulation of the opium traffic in the islands will not come up formally for passage until June. Meanwhile, the War Department has been inquiring carefully into the lines to be followed. It appears that the Commission purpose to put up for competitive bidding a monopoly of the business, and award the privilege to the highest bidder. This was done under Spanish rule, and the revenue from opium farming in the Philippines amounted to $650,000 a year, which appears to have been applied to general expense account. The Commission purpose applying the revenue derived from the monopoly to sending young Filipinos to this country to be educated, to building additional schoolhouses in the islands, and to increasing the pay of the local teachers. The opium farmer will be required to furnish a heavy bond. Every ounce of opium which comes in will be recorded, and every ounce he sells must be recorded also, with the date, name and address of purchaser, etc. The idea is thus to keep a tally on all opium in sight and where it goes. The sale, except to full-blooded Chinese, will be prohibited. The Commission thinks that this system will have the effect of reducing the gross volume of consumption, and will make the official farmer a detective for the government in preventing the smuggling or illicit traffic of others, so that there will be practically only one man to watch.

**Deaths from Plague in the Punjab.**—The deaths from the plague in the Punjab from January 1 to May 2 numbered 141,789, according to a statement made May 27 by Lord George Hamilton, the Indian Secretary, in the House of Commons.

**Bubonic Plague at Iquique.**—The report that cases of bubonic plague had been discovered at the Chilian seaport of Iquique is confirmed. There were ten cases Monday, May 25, six of which were fatal. The authorities have taken all the steps possible to prevent a spread of the plague. The disease was brought to Iquique in a cargo of rice from India.

**The Case Against Malaria.**—In *The Popular Science Monthly* for April Prof. Glenn W. Herrick gives several reasons for regarding malarial fever as more detrimental to human welfare than is commonly supposed. The writer is connected with the Mississippi Agricultural College, and considers the matter almost exclusively from the Southern point of view; but his conclusions are of more than local interest. He first tabulates the deaths from several different causes for the year ending May 31, 1900, in his own State and Louisiana, Alabama, Georgia and South Carolina. Here are some of his totals: Consumption, 11,595; pneumonia, 10,494; typhoid fever, 6,715; heart disease, 5,329, and malaria, 4,778. The direct effects of malaria thus seem to be comparatively small. Its indirect effect, though, is more serious. Leaving a patient, as does the grip, in an enfeebled condition, it predisposes him to attacks of something else. In this respect it is responsible for a much heavier mortality than would appear from the foregoing figures. The most original, if not the most important, part of Professor Herrick's article touches the injury done to agriculture and other industries in the South by the disorder under consideration. The proportion of cases of malaria that terminate fatally is very much smaller than that of cases of consumption, pneumonia and typhoid. Dozens of victims recover from the former to one who survives the latter. The aggregate amount of sickness produced by malaria alone is, in Professor Herrick's estimation, far greater than results from all of the others included in his tabulation. Accepting as the basis of his calculation a ratio that has been worked out in Italy, he says that the 4,778 deaths from this cause which appear in his table represent 635,000 cases during the corresponding year; and he is inclined to believe that this is an understatement of the facts. One effect of such a state of things is to reduce the earnings of the individual and involve an inconvenient expenditure for doctors and medicine. Another is to lessen the output of cotton, sugar and other produce in a given community. A third is to keep the price of land at a much lower level than it ought to attain. Speaking more particularly of the delta of the Mississippi, Professor Herrick declared that if the time ever comes when malaria and yellow fever are banished by controlling the mosquitoes that region "will be the richest and most populous in the United States."—*Tribune.*

## CORRESPONDENCE.

### A FOOTWAY NUISANCE.

*To the Editor of the* MEDICAL NEWS:

DEAR SIR: A foreigner, spending some time in our city, remarked, while walking up Fifth Avenue, that it always made him homesick for his native Holland, as he side-stepped to avoid the fecal discharges of dogs scattered along the footway at frequent intervals. The correspondents in lay and medical journals who have approached the dog-pavement nuisance are short one argument, namely, the unconcern with which the female portion of our population formerly dragged their skirts through street filth, for this year Dame Fashion has seemingly taken cognizance of the evil and decrees a short-length skirt for walking. Nevertheless the idiomatic expression, "putting one's foot into it," more forceful than elegant, does not lack for daily, numerous demonstrations upon the part of the unwary. Everyone should be interested in securing clean pavements as well as having clean streets, and filth has never yet been cleaned away by being covered up any more than a scratched flagstone by a "clean" dog will protect the passer-by from contamination or a fall.

A footman, having in charge a large French poodle, settled the question to my satisfaction, for upon the animal being taken with the convulsive throes of constipated effort, in the middle of a thronged pavement, dragged the dog to the street.

Canine excrement is as repulsive, if less viciously germ-contaminated, as human spittle and deserves the notice of our Board of Health. Small signs attached to lamp-posts directing those who, through carelessness or thoughtlessness, allow their leash-led pets to soil the footways, to lead them to the street would make an end of this plague. A durable sign of a dog and an arrow-head pointing toward the curb would certainly be no more injurious to the esthetic taste than the signs which are displayed for "men only." I have often thought that the master is mirrored by the dog, the reference to a lack of possession of niceties of personal toilet of those who allow their dogs to thus foul our streets may appeal to the thoughtful and strike home by wounding vanity of the few for the public good.

FREDERIC GRIFFITH.

805 Madison Avenue.

## TRANSACTIONS OF FOREIGN SOCIETIES.

### German.

PRIMARY TREATMENT OF WOUNDS IN RECENT INJURIES—USE OF THE COLPEURYNTER IN MIDWIFERY—DESCENDING HEMATOGENOUS TUBERCULOSIS OF THE URINARY APPARATUS.

HERR REICHEL, in the Medical Society in Chemnitz, Feb. 11, 1903, read a paper on the primary treatment of wounds in recent injuries. As an introductory dictum, he said that he was surprised to see how frequently physicians in actual practice transgressed against the simplest fundamental rules of the aseptic treatment of wounds in recent injuries. He made especial reference to observations which he made concerning patients in the hospitals whose wounds had been sewn from end to end tightly by various physicians, although the conditions of the wounds and the parts, in virtue of severe crushing or tearing of the tissue, made it very unlikely that a primary union could be established. He therefore desires to limit the primary suture of such wounds to only the following: (1) When all circumstances permit the securing of the most minute aseptic precautions; (2) when wounds were very fresh and probably had not been affected, for example, in cases of compound fracture, where the wound was very small; (3) when the tissues were universally and entirely capable of living. When these conditions are not present he advised that the wound should be primarily left open after a most thorough and careful cleansing and disinfecting of the surrounding tissues, combined with tamponade with sterile or iodoform gauze, according to circumstances. If the wound remains aseptic and without reaction, he then, on the second or third day, recommends a secondary suture, and usually obtains a linear reunion. Even in these cases, if there should be any doubt whatever, drainage should be provided for.

**Herr Bollenhagen**, at the Frankish Society of Midwifery and Gynecology held in Würzburg, Jan. 31, 1903, read a paper on the use of the colpeurynter in midwifery. In using this bag for causing artificial abortion, its advantages are found to be great over the method of Krause, which might be regarded as a method of second choice. The duration of the birth is usually decreased; the number of the internal examinations and of the manipulations are likewise diminished and secondarily, the number of puerperiums accompanied by fever. The percentage of living children is greater than in the method of Krause, although the number of spontaneous births with vertex presentation is less with the bag. As a practical and valuable point he states that as soon as the bag has been rejected it is advisable to do a version and to extract the child, rather than to wait and thus decrease the chances for both mother and child. On these grounds alone a large number of writers have gone from the bougie over to the bag. In the treatment of placenta previa it is not always necessary to insert the balloon so soon as the diagnosis has been made, for often the bleeding ceases and the birth does not begin. Consequently in such cases it is better to rupture the membranes at once. The balloon is only to be used in these cases when a very large portion of the placenta is over the os, and when the bleeding is very rapid. It should then be carried upward into the cavity of the membranes and should not be placed in the cervix of the uterus just beyond the bleeding surface of the placenta. For the version of Braxton-Hicks the bag has the advantage of making narcosis unnecessary and of rendering the operation easier. Although the mortality of children in placenta previa is usually very high, with the aid of the bag it is also much decreased. He closed the paper with a warm recommendation of the balloon, but warned his hearers that the advantages of the apparatus, as shown by statistics, may be deceptive, because they are the result of the use of the bag by such physicians as have had great experience in such cases. The conditions which the experience of these men has laid down for the use of it must be met by all who try it.

**Herr Gutzel**, at the Society of the German Surgeons in Prague, Feb. 13, 1903, read a paper on Descending Hematogenous Tuberculosis of the Urinary Apparatus. The teaching of Guyon that ascending tuberculosis of the urinary apparatus, which spreads by contiguity from the bladder upward through the kidneys is the much more frequent form of tuberculosis in the urinary system, was established and remained accepted until cystoscopy and autopsies on surgical patients began to combat it. Now, however, the dictum is made that the descending form of tuberculosis, which begins in the circulatory system of the kidneys is much more common than the ascending, which is recognized to-day as one of the curiosities of disease in the kidneys.

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**Sarcoma of the Thumb.**—This is a condition rarely seen, only a few cases of digital sarcomas having been reported. To this number may be added two further cases, recorded by W. B. Trimble and G. R. Satterlee (Am. Med., May 16, 1903), of giant-celled melanosarcoma occupying a position on the terminal phalanx around the nail. Amputation was resorted to in both cases after the condition had resisted ordinary forms of treatment and the diagnosis was finally made on microscopical examination.

## SOCIETY PROCEEDINGS.

### CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

*Held at Washington, D. C., May 12 to 14, 1903.*

### AMERICAN PEDIATRIC SOCIETY.

(Continued from Page 1050.)

Second Day—May 13th.

**Gastro-enteric Infections of New-born Children.**—Dr. Irving M. Snow, of Buffalo, said that the first four weeks of existence were the most dangerous to human life. A few years ago 80 per cent. of early deaths were attributed to congenital debility, to-day atelectasis, intra-cranial hemorrhage and sepsis were known to be among the more important causes of infant deaths. There were many ways in which the new-born child might be infected, but the alimentary tract as a site of infection had not been considered in many text-books. Infection might be introduced in various ways, by the finger of the accoucheur or nurse, by the breast, in the milk, and at times the amniotic fluid was responsible for the infection. In a young child the infection soon became general, whatever the path of entrance might have been. Vomiting, diarrhea and colic along with other signs might be due to dyspepsia, but a severe gastro-enteritis meant an infection. The dividing line between dyspepsia and gastro-enteric sepsis, as manifested by the physical signs, was variable, depending upon the virulence of the infection. Dr. Snow described five cases which he considered to have had severe gastro-enteric infections. The cases were characterized by fever, rapid pulse, irregular respiration, vomiting, diarrhea and great prostration. The stools contained blood and mucous and were very offensive, in some cases tonic spasms were present. The prophylactic treatment should consist in rigorous asepsis and careful attention to the toilet of the mouth. A case that had developed should be closely watched, as sudden alarming symptoms were common, strychnine, atropine and artificial serum were valuable therapeutic adjuncts.

**The Relation of the Bacillus of Shiga to the Summer Diarrheas.**—Dr. Simon Flexner, of Philadelphia, in response to an invitation to speak to the society on this subject, said that there had been no want of effort to discover a cause of diarrheal diseases, but that little definite information had been obtained as to the cause of infantile diarrheas previous to recent investigations. While on an expedition to the Philippines, Dr. Flexner had devoted much time to the study of dysentery and had no difficulty in establishing the existence in these cases of a micro-organism well defined, which differed from the ordinary intestinal bacteria and which resembled the bacillus of Shiga. The bacilli were picked out by means of Widal's agglutination test. This organism resembled the typhoid bacillus, but certain definite characteristics rendered a ready differentiation possible. Since Shiga described this organism it had come to be recognized as a cause of a definite group of acute cases of dysentery in adults. Dr. Flexner thought that the same methods of studying the diarrheas of infants might yield results of value. Fifty-two cases of severe summer diarrheas were studied at the Wilson Sanitarium, near Baltimore. In 45 cases the bacillus of Shiga was present. The blood serum of these children gave a positive reaction with the organisms obtained from their own dejecta, with the organisms obtained from the dejecta of other children and also with organisms obtained from Japan and the Philippines. In these cases blood and mucous were present in the stools. It was not easy to find the bacteria in formed feces, it was much easier when mucous was present and still more so when both blood and mucous were present. Dr. Flexner called attention to a few points of practical importance. He said that it was desirable for those who attempted to obtain the bacteria from stools of suspected cases to first study the bacilli of Shiga for ordinary cultures closely resembled the typhoid and colon bacteria. He also called attention to a trick in the technic of colony transplantation. It was suggested that all colonies which developed in the first twenty-four hours of incubation be marked with a blue pencil, these would be mostly colon bacilli. The bacteria should be allowed to grow for a second twenty-four hours and the newly-developed colonies should be transplanted, in the second crop the dysentery bacteria were most likely to be found. The culture medium should be glucose-agar. Colon bacilli decomposed the glucose with the formation of gas, the bacilli of dysentery did not, this fact allowed of a second means of colony differentiation. Careful study had revealed the fact that the bacteria of dysentery were not of a single type. A group of Shiga's bacilli was now recognized which had marked agglutinating properties, but which did not change litmus when cultivated on a mannite medium. A second group was also recognized which had all the cultural properties of the first, but differed in its agglutinating properties and gave an acid reaction to litmus when grown on a mannite culture medium. At present it is impossible to say that one or the other type is the cause of dysentery; in some epidemics one type was found, in others another type, in some cases both were found. All of the cultures obtained from the children produced an acid reaction when grown on a mannite medium and were not the original bacilli described by Shiga. The position which these organisms shall occupy as etiological factors in diarrhea must be determined by the future.

In discussion Dr. W. H. Park, of New York, spoke of the difficulties of the agglutination test and added that when the dysentery bacilli were present he expected to find blood and mucous in the stools.

Dr. Henry Koplik thought that summer diarrhea was a very complex entity. He said that the great majority of cases occurred in artificially fed infants caused by anatomical or physiological insufficiency of the gut or the diarrhea was dyspeptic and dealt with a foreign element. A second group of cases were caused by micro-organisms contained in the food itself. A third group would include the infectious cases, micro-organisms having been introduced from the outside. Still another class would include those cases in which amebæ of different varieties were found in the dejecta. In summer diarrhea various bacteria probably combined to form a complex etiological factor. Dr. Koplik thought that the group of cases caused by the bacilli of Shiga was limited and said that clinical experience and bacteriology should go hand in hand in the further study of this subject.

Dr. L. Emmett Holt, of New York, said that Dr. Flexner's studies had shown what might be looked for in a certain type of cases. He added that unless evidence could be found in the blood it was impossible to say that certain bacteria were the cause of a disease even though the bacteria were present in the stools. Dr. Holt had superintended investigations in 120 cases of diarrheas, in 37 of these the bacillus of Shiga was found and gave a blood reaction. There was not a single case in which blood was in the stools in which the bacillus of Shiga was not found, many cases, however, in which much mucous was present in the stools, did not reveal the presence of the organism. In one case the bacilli were present in the stools six weeks after acute symptoms had subsided, in most cases they disappeared in a much shorter period, the reaction being obtained as a rule until the second week. There was no characteristic pathological lesions in these cases. Dr. Holt had used some anti-bacteriolytic serum obtained from Dr. Flexner with some good results. The effect was very transient, the dose (10 c.c.) had to be given every day or every second day, the serum treatment, ne said, looked hopeful, it must be given on the clinical diagnosis as it required forty-eight hours to make a bacteriological examination. Dr. Knox, who was in charge of the Wilson Sanitarium, said that blood was never excessive in the stools of the acute cases in which the bacillus of Shiga was found. In a few cases no blood was present, the organism having been found in the mucous. He also said that he could not clinically or pathologically differentiate the cases in which the bacillus of Shiga was found from those classed as ordinary summer diarrhea. In closing the discussion Dr. Flexner said that the problem was very complex and that he had not committed himself to any idea except that the bacillus of Shiga occurred in some of the diarrheas. The serum therapy was experimental and attempted to deal with an organism which held its poison closely bound up in its own protoplasm; to be of use it must be used early.

**Two Cases of Abscess of the Lung.**—Dr. L. Emmett Holt, of New York. Read by title.

**The Infections of the New-born.**—Dr. S. M. Hamill, of Philadelphia, said that the infections of infancy should be classified on a bacteriological basis. He described six cases which had been studied with Dr. W. R. Nicholson, of Philadelphia; in each instance the death of the infant had been due to an extensive bacterial invasion. Streptococci, staphlococci and colon bacilli had been found in various organs. These germs had been found in the dust of the rooms in which the infants were confined, in the bedding, in various toilet articles, in the mothers' clothes and in the bath water of the infants. Poorly trained and careless nurses were probably responsible for most of these infections. In regard to the preventive treatment, Dr. Hamill said that general aseptic technic of the maternity hospital staff should be insisted upon, only regular attendants should be admitted to the wards, these should wear gowns and wash before and after handling the infants. The children should be in a separate ward from the mothers, and under the care of a careful and well-trained nurse. The breasts of the mothers should be watched and the mouths of the infants carefully cleaned. In the discussion Dr Koplik said that he did not think it necessary or wise to cleanse the babies' mouths after they had been once cleaned. It was important, however, to keep the mothers' breasts and the bottle nipples clean.

**The Etiology of Rachitis.**—Dr. Roland G. Freeman, of New York, said that the disease had been recognized for two hundred and fifty years, but even today the exact cause was unknown. It is not an affection of the long bones alone, but a general disease found in temperate and cold climates, those suffering most being individuals who come from a hot to a cold climate, most cases occurring in negroes. Race and climate were predisposing causes, the active causes seemed to be in the diet. A recent theory was that rickets was due to a lack of fats in food. Experiments by Dr. Herter, of New York, on animals showed that fat starvation did not cause rickets, but mucoid degeneration, except in cases in which there was an excess of carbohydrates in the food. The fact that artificial foods contained an excess of carbohydrates probably saved many babies from mucoid degeneration. Dr. Freeman had studied many cases in New York and considered that the most important cause of rachitis was the persistent use of some unsuitable food. He said that the disease was especially common in children who had recently migrated from a warm climate.

In discussion, Dr. S. S. Adams said that rachitis was more and more infrequent in proportion to the education of the physician in the proper methods of modifying milk. Dr. Miller, of Philadelphia, emphasized the important part that absence of sunshine and good air played in the causation of rickets.

Dr. Cotton said that it was rare to find rickets in an infant at the breast. When such a condition was found almost invariably the mother secreted abnormal milk. The proper modification of cow's milk was extremely important, but more study should be given to errors of lactation. Physicians were in the habit of shying at this point, the aim should be to make the mother give good milk.

**The Value of the Incubation Period in the Diagnosis of the Contagious Diseases of Childhood.**—Dr. Alfred Hand, of Philadelphia. Read by title.

**Study of Two Cases of Intussusception. Lumbar Puncture in Serous Meningitis.**—Dr. Francis Huber, of New York. Read by title.

### THIRD DAY—MAY 14TH.

**Some Clinical Analyses of Milk Mixtures.**—Dr. D. L. Edsall, of Philadelphia, gave a brief review of a series of experiments which he had carried out assisted by Dr. Charles A. Fife, of Philadelphia. He said that accuracy in the per cent. modification of milk was so important it was striking that no control had been furnished for such modification.

Dr. Edsall had found it of interest to make a series of analyses of modified milks which were obtained under varied circumstances, and compare his results with those obtained by the original modifier. He had obtained milk from known and reliable sources and had it modified by known and reliable persons. He also obtained milk from unknown and unreliable sources which had been modified by unknown and unreliable persons. It was found that the fats in the milk modified at a laboratory by reliable persons came very close to the formula, there were few errors of more than .2 per cent. In many of the milk mixtures modified at home by trained nurses the error in the fat percentage was as high as 2 per cent. The proteids in all cases followed the formulæ more closely than the fats. In considering the results of milk modification it must be remembered that it is quite impossible to make an absolutely accurate per cent. estimation because the proteids in the best of milk which is supposed to be of constant quality might vary from one-half to one per cent. from day to day, while the fats might vary still more. In drawing some conclusions from his experiments Dr. Edsall said that the laboratory milks which he examined were practically free from criticism. The examination of the specimens modified at home indicated that certain definite plans should be followed. The milk and cream should be obtained from a known and reliable source and reliable and competent persons only should be allowed to make up the milk mixtures.

**The Determination of Fat and Total Solids in Milk.**—Dr. Henry L. K. Shaw, of Albany, said that he had made an analysis of thirty specimens of milk to determine the fats and total solids, employing several tests for each sample of milk. Babcock's test, Gerber's test and Holt's cream gauge gave the most constant results. Dr. Shaw recommended a modification of Babcock's apparatus for office use in the determination of fats. Total solids could be determined by the specific gravity (corrected) and the per cent. of fat. By using Richman's sliding scale the results could readily be obtained without employing mathematics. In discussion, Dr. S. S. Adams said that the unreliability of many milk modifications was appalling, he thought that most laboratory inaccuracies were due to carelessness and inefficiency. The most reliable domestic method of modification in his experience was by the use of the conical dipper.

Dr. Cotton emphasized the importance of physicians, knowing the quality of the mother's milk, several examinations being necessary before any deductions could be made. The methods of milk examination described by Dr. Shaw commended itself for its simplicity.

Dr. Chapin, of New York, attested the value of the Babcock test and said that it was now time that the proteids had more attention.

Dr. Edsall said that centrifugal machines were valuable and sufficiently accurate for general clinical purposes. Physicians should get in the habit of examining milk as readily as they examine urine.

**A Note on Abdominal Auscultation in Infancy.**—In presenting a second paper, Dr. Shaw said that he had never seen mention of this means of diagnosis in text-books. In infants and young children the respiratory sounds were transmitted to the abdomen and could easily be separated from the intestinal sounds. A case of lobar pneumonia was described in which râles were heard over the abdomen before they were heard over the chest. Râles from acute bronchitis could also be heard; the more distended the abdomen the clearer were the sounds.

**Principles of Infant Feeding as Based on the Evolution of Mammals.**—Dr. Henry D. Chapin, of New York, said that the essential difference between human milk and cow's milk was in the proteids, these might be nearly of the same composition but assumed different forms. Dr. Chapin called attention to some facts relative to the development and early nutrition of the young of certain types of mammals. The earliest types of mammals deposited eggs in a nest and nourished the young by the ejection of milk into the mouths of the offspring, the mother having no teats. In another type the egg was deposited in a pouch of the mother, where the young animal was developed. The milk was ejected by the mother along the course of certain hairs to the mouth of the young. In still higher types the egg became hatched within the mother, and the young animal, after birth, became attached to the mother's teat, the young had no power to suck. In yet higher types the young became attached to the uterine wall and had a placental development. The method of development of an animal seemed to depend somewhat on the ability of the mother for defense. About the third month marsupials became attached to the mother's teat; this corresponds to the time when a woman begins to secrete colostrum. From an evolutionary standpoint it seemed logical to consider an infant as passing through three stages of development, a preplacental of three months, a placental lasting six months and a mammary of ten or twelve months. When a child had been early deprived of the breast it should be considered premature. Dr. Chapin emphasized the importance of studying the digestive changes which milk underwent in an infant's alimentary tract and said that the function that milk possessed of developing the digestive tract should be remembered. In conclusion the following considerations were emphasized: (1) In development an infant passes through three stages of development and should be looked upon as attached to the mother in all three; (2) at the beginning of the mammary stage an infant has but a rudimentary stomach; (3) during mammary development the mother changed the character of the infant's food from colostrum to milk, and the infant's digestive secretions so changed the character of the milk that as the digestive juices increased in quantity and strength the work of digestion was increased, for the stronger the gastric juice became the tougher the curds became, due to a combination of the acid with the curds; (4) all milk would produce tissue but it differed in composition with the rate of growth of the young animal. Proteids differed according to the type of digestive tract they were to develop; (5) cow's milk could not be changed to human milk by any known method of modification. In milk modification it must not be forgotten that a food was to be sought for which would develop the digestive tract; (6) a certain minimum amount of proteids, carbohydrates, fats and mineral material was necessary for the nourishment of an infant, breast milk should serve as a guide to the required amount; (7) milk was the most perfect infant food, not only because of its nutritive properties, but because it contained the only proteid that could develop the digestive tract; (8) the proteid of cow's milk was intended to develop the stomach of a calf to digest grass, it must be modified to meet the requirements of an infant; (9) this modification might be accomplished by mechanically or chemically altering the character of the curds by diluting them with alkalis or gruels; (10) when, for any reason, a child could not take a sufficient quantity of cow's milk it should be supplemented by other forms of nucleo-albumins until a normal quantity could be digested, it was an error to attempt to overcome indigestion by feeding too low proteids.

In discussion Dr. Rotch said that while it was interesting and important to study the different forms of proteid, certain practical principles should not be overlooked. In whey a high proteid and in caseinogin a low proteid could be obtained, a child had a stomach when born, which under normal conditions was able to digest these forms of proteid. Colostrum was an accidental secretion and not milk.

Dr. Chapin said that the casein of cow's milk was not the same as that of mother's milk. In whey soluble albumins were dealt with and not nucleo-albumins, which were the essential tissue builders. It was not then physiological or a clinical advantage to use whey constantly. Future investigations should be along the line of the proteids and at all times the physician should aim to keep babies at the breast when possible.

**A Report of Eight Cases of Pneumonia in Infants Treated with Antipneumococcic Serum.**—Dr. John Lovett Morse, of Boston, presented this report and said that he had tried many times during the last twelve years to obtain a serum of value in pneumonia in man, but results had been unsatisfactory. Dr. Morse described eight cases that had been treated with anti-pneumococcic serum, the serum having been given in doses of 5 c.c. to 10 c.c. every four hours. From these eight cases he drew the following conclusions: That in no case was there any effect on the temperature; in no case was the disease shortened; in no case was the crisis postponed; in no case was there any effect on the pulse rate; in no case was anything noticed to justify a statement that there was any alleviation of the subjective symptoms.

In discussion, Dr. Jennings described a case of pneumococcic meningitis in which the antipneumococcic serum was used. There was no influence noticed on the clinical phenomena of the disease or the subsequent meningeal cultures.

**A Case of Myxedema.**—Dr. George N. Acker, of Washington, described the case of a child that had undergone perfectly normal development up to the eighteenth month. When eighteen months and three weeks old the child had a severe attack of diphtheria, the case was not treated with antitoxin. Apparently the child never recovered from this illness, in six months its general appearance began to change, it could not walk, the bridge of the nose became flattened, the legs were flabby and swollen, the abdomen and face were swollen, the face of child lost all expression, it took no notice of objects and did not know its mother. The child slept well and had a good appetite, it increased in weight but not in length. The arterior fontanel remained open, the hair was straight, coarse and dry, the thyroid gland could not be felt. Harrison's groove was marked, the child kept its mouth open, its tongue was large and flabby, most of its teeth became decayed. Thyroid extract was given in half-grain doses three times a day, the dose was gradually increased up to three grains three times a day. The administration of this drug was followed by a marked improvement in all the symptoms.

In discussion, Dr. Koplik cited the case of a child nineteen months old in which thyroid extract was given until it was seven years old, when the treatment was discontinued. In one month the myxedema returned in a most aggravated form, the treatment was immediately resumed. Cases of myxedema must be under constant treatment. Dr. Koplik said that a child could stand large doses if the drug was pure, as much as nine grains three times a day had been given. A rise in temperature might well be due to an impurity of the drug and was not to be considered an indication for discontinuing the treatment.

Dr. Cotton inferred from his experience that the long continued use of thyroid extract rendered the children especially susceptible to the ordinary infections.

**Pulmonary Osteo-Arthropathy in a Child Three Years Old.**—This paper was presented by Dr. T. M. Rotch, of Boston, who had been assisted in the care of the case by Dr. Hunter Dunn, of Boston. A boy, three years old, who had had a normal birth, developed measles when two years old and later had pertussis. He had no general symptoms, nothing especially wrong had been noticed with his pulmonary apparatus. Later he began to cough two or three times an hour, continuing for a year, subsequently the cough became worse and relief was sought at the hospital. He had never been troubled with night sweats or digestive disturbances, his finger tips had begun to enlarge nine months before entrance to the hospital. On examination there was flatness on percussion over the left upper chest in front and dulness behind, loud bronchial breathing, bronchial voice and loud crackling râles were heard over this area. There were no subjective symptoms of disease, the child ran around and played as a normal child. The abdomen was prominent, reflexes normal, blood and urine were normal. The sputum was loaded with Pfeifer's bacilli of influenza. The tuberculin test was negative in its results. It was supposed that there was a consolidation in the left lung and that this might have been due to an unresolved influenza pneumonia.

In discussion Dr. West, of Ohio, reported a similar case of a child three years old that had never been well from birth. When eight months old it began to cough, after an attack of measles, the cough became worse, there was a slight clubbing of the fingers, the chest was bowed backward and narrow, coarse râles were heard over the chest, the skin was rough on the finger tips and had been attributed to nail biting. When four years old the clubbing of the fingers was very marked. Improvement followed the use of creosote, given by mouth and by inunctions.

**A Case of Chondrodystrophy Totalis in a Child Fourteen Months Old.**—Dr. J. Park West, of Ohio, described a child having a negative family history, which was apparently normal at birth, but subsequently developed a large round head, short thick hands and fingers. When five months old an angular curvature of the lumbar spine was developed. There was occasional sweating about the head, the anterior fontanel and frontal suture remained open, tnere was slight exophthalmos. The child apparently had about 2½ times as much skin as was necessary, the muscles were soft, all joints were normal, there was no curving of the long bones. A curious feature was a deviation of two fingers to the radial and two to the ulnar side of each hand. The child never made any attempt to sit alone, it had been subjected to various courses of treatment, none of which seemed to alter its condition. The main difference in appearance from a normal child consisted in the length and size of the bones, the only resemblance to rachitis was in the sweating and shape of the head.

**Congenital Gastric Spasm of the Pylorus.**—Dr. West also reported this case: The child was seen on the twenty-second day of its existence, it had been vomiting everything that had been taken into its stomach and gave evidence of severe pain. A swelling in the pylorus could be felt, a fact which led to the diagnosis of hypertrophic stenosis. On autopsy a hypertrophic condition was found of the circular muscular layer, a condition which probably exists in most cases of supposed hypertrophic stenosis of the pylorus. Prompt surgical treatment was recommended in such conditions.

**The Prophylaxis in the Prevention of the Spread of Vulvovaginitis in Hospital Service.**—Dr. Henry Koplik, of New York, considered vulvovaginitis the most annoying infection in hospital practice. Aside from its repugnant features it was a menace to the individual and a source of infection to others. There must always be a definite source of infection, all paths were not yet known, the literature on the subject gave but little data. It had been supposed that the infection was carried by means of napkins, catheters, fingers and other ways, but one thing was certain, that a pure culture of gonococci rubbed on the parts do not always produce the disease. In children a urethritis or a proctitis is prone to give rise to a valvovaginitis, a chronic scanty discharge was more to be feared, for it was apt to be neglected or overlooked. Any purulent rectal discharge should always be examined for gonococci. Among the many avenues of infection were mentioned bedpans, catheters, nurses' hands and clothing, linens, rubber sheets, wash rags and bathtubs. In an infected case complete isolation should be resorted to, each child having had a careful examination on admission to the hospital. In Dr. Koplik's hospital service every female child had its own wash basin and toilet articles, each bed had a thermometer case attached to it, if a child had a discharge, the thermometer was not used for other children but kept in its own case. A bedpan once used in an infected case was never again used on a clean case. Every female child was protected by a vulvar pad against infection from the hospital linen. All bedding from an infected case was sterilized before it was sent to the laundry and was kept carefully apart from the other bedding. Dr. Koplik took the precaution to have the bed of every infected case marked with a red bandage, no nurse attending an infected case was allowed at any time to touch a clean case.

In discussion, Dr. Chapin said that frequently cultures would prove cases to be infected in which there had been no sign to arouse suspicion.

Dr. Dodson, of Chicago, said that the importance of this affection was not fully appreciated. The patients, he said, were at the mercy of the nurse, nurses were not sufficiently trained in practical bacteriology. The disinfection of appliances used in infectious cases was frequently left with irresponsible persons. He added that the usual injections in these cases were not efficient, remedies should be kept in contact with the parts almost continually.

Dr. Downing, of New York, said that the possibility of a foreign body in the vagina should never be overlooked.

**Nasal Intubation (Soft Rubber) for Relief of Dyspnea Due to Acute Naso-Pharyngeal Swelling in Infants.**—Dr. Wm. P. Northrup, of New York, described a case of acute swelling of the tonsils and pharynx in an infant causing extreme dyspnea. Syringing was quite inefficient, steam inhalations gave but slignt relief, tracheotomy was thought to be the only hope, when it occurred to Dr. Northrup to introduce bits of drainage tubes into the nares. The tubes were inserted about two i· ches, the procedure being followed by immediate relief. The child sank into a quiet sleep and the tubes were allowed to remain twenty-four hours. When the tubes were removed the child immediately became cyanosed and all the previous symptoms were repeated. In Dr. Northrup's opinion the nasal intubation tided the child over a condition that would otherwise have been fatal.

In discussion, Dr. Morse, of Boston, cited a case of nasal and pharyngeal obstruction in which relief was given by the use of adrenalin chloride.

**O'Dwyer Intubation Instruments.**—Dr. Northrup exhibited the most recent O'Dwyer intubation sets. The set contained two new small tubes and a fixed obturator so devised that it could not turn on itself.

**Still's Type of Chronic Deforming Polyarthritis.**—Dr. D. L. Edsall, of Philadelphia, said that Still had described a chronic deforming polyarthritis which was readily distinguished from arthritis deformans. The disease usually appeared before the first dentition as a rule, accompanied with fever and associated with a general enlargement of glands. The affection had no tendency to go on to bony deformity. Dr. Edsall described the case of a boy in which the diagnosis of acute articular rheumatism had been made. The child lived but eighteen months. At the time of death there was an ininvolvement of all joints, most of which were dry and but very slightly movable, there was a tendency to general enlargement of the glands. An injection of tuberculin was followed by a marked reaction, both general and local, in the joints; the reaction subsided in twelve hours. Unless the joints were considered tuberculous there were no other signs of tuberculosis. Tubercule bacilli were found in the glands, but injection of these bacilli into guinea-pigs did not cause tuberculosis to develop in these animals, the bacteria were undoubtedly of low virulence. From these observations Dr. Edsall thought that the disease was probably dependent upon a tuberculous process.

**Disturbances of Respiration in the New-born.**—Dr. W. Reynolds Wilson, of Philadelphia, said that the respiratory disturbances of the new-born were for the most part included in the following conditions: asphyxia, congenital atalectasis, dyspnea and rapid respiration. The chief causes of asphyxia were deficient abdominal muscular action, traumatic causes and paralysis of the respiratory center due to toxic influences arising from the alimentary tract.

Dr. Wilson described a case in which he considered the respiratory disturbance to be due to this latter cause, adding that the signs of this disturbance might resemble Holt's fever of inanition. The main causes of dyspnea were congenital malformations, cardiac disturbances, pneumonia, sterilic dyspnea, dyspnea due to enlarged thymus, pulmonary apoplexy, dyspeptic dyspnea which is toxic in origin, and diaphragmatic hernia, which sometimes gave periods of distressing dyspnea. The main causes of rapid respiration were dyspeptic, the common pulmonary affections and systemic infections.

In discussion, Dr. Saunders, of St. Louis, said that gas logs, in throwing out the products of combustion into the room, not infrequently had caused apnea. In cases of apnea he had found flagellation very quick and efficacious, a favorite method being to snap the feet of the child with a rubber band. In case of aspiration of fluid into the lungs great relief might be obtained by making the child gag by tickling the pharynx.

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## ASSOCIATION OF AMERICAN PHYSICIANS.

(Continued from Page 1052)

### THIRD DAY—*Continued.*

A second patient, a boy of eighteen years, is extremely sensitive to cold, so that even an exposure of the hand to sixty degrees brings on an attack. In this case the attacks began at three years of age and in the other case at four years of age. Both of the patients have a history of hereditary syphilis. One of the mothers was confined in an insane asylum, the other suffers from a form of major hysteria. So far 206 cases of the disease have been reported, of which only 4 to 5 per cent. have been in females. This rarity among females is all the more striking since it is through the mother that the disease is inherited through mother. The disease usually develops in the third and fourth decades of life, though, as in these two cases, it may occur very early. At least one case has been reported in the second year and in some reported cases it originated after sixty years of age. The affection is never fatal and is not accompanied by hemophilia.

**Characteristic Symptoms.**—Temperature running up to 102° to 103° F. and even as high as 105° F. occurs with the paroxysm. It is harder to make this fact fit in with the theories of origin of the disease than any other. The affection is not a malarial hemoglobinuria. There is always pain in the lumbar region. The liver and spleen are always enlarged. A slight albuminuria precedes the attack. There is an increase of uric acid in the urine.

**Peculiarities of Causation.**—The absence of red cells in the urine is very noticeable and makes another stumbling block in the explanation of the disease. Muscular fatigue is a very common cause of the attack, but must be of a certain source. Walking causes it much more than other forms of exercise. Soldiers contract it after a forced march, and young men who may be able to take gymnastic exercise or indulge in severe exertion in games without evil effects have attacks after a tiresome walk.

**Pathology of Thyroid and Parathyroid Glands.**—Dr. W. G. McCallum, of Baltimore, said that the development of our knowledge of parathyroid physiology and pathology is one of the most interesting chapters in modern medicine. When the thyroid gland is removed from animals they are well for two or three days, and then a set of acute symptoms followed by death ensue. Gley, the distinguished French physiologist, showed some years ago, however, that these acute symptoms did not develop if the parathyroid glands which lie in the region of, but outside the thyroid substance, were not removed at the same time. He showed also that the removal of the parathyroids alone would cause the acute symptoms. These are first great unrest, followed by fibrillary twitchings, then tonic and clonic contractions. The tongue waves about. Then the animal becomes unable to stand. Attacks of tachypnea develop, during which the animal breathes with extraordinary rapidity, 200 times to the minute. Salivation occurs, and there is retraction of the upper eyelid, which gives an appearance resembling exophthalmos. This is accompanied by apathy and by attacks that are epileptiform in character.

**Experimental Investigations.**—It is not difficult to confirm experimentally the conclusions reached by Gley that the removal of the parathyroids alone will cause the acute symptoms while the removal of the thyroid does not produce death in a few days, but only the progressive myxedema which has been found so often to occur in human beings and certain animals. For a time the carnivorous and herbivorous animals were thought to be different in these respects, but this is only due to the fact that in the herbivora the parathyroids are quite widely separated from the thyroids and so were not usually included in the removal of the thyroids, while in the carnivora the two sets of glands lie so close together as to make their separate removal much more difficult. Dr. McCallum has found that in dogs suffering from the acute symptoms of the parathyroid removal the suffusion of blood from another healthy dog cured the acute symptoms at once. He also found that if normal salt solutions were injected after thorough venesection, the dog also became perfectly well. It is evident that the removal of the parathyroid does not do away with some secretion. but stops the neutralization of a poison that exists in the blood. When all the nerves to the leg of a parathyroidectomized animal are cut no contraction or fibrillary tremors take place. The action of the poison then is evidently on the central nervous system. When the spinal cord is cut, only the portions of the body above the section are affected, showing that the poison acts on the higher centers.

**Relations to Exophthalmic Goiter.**—Dr. McCallum said that hypertrophy of the parathyroid would evidently cause quite a different set of symptoms to those produced by hypertrophy of the thyroid. There is especially an excess of iodin in the parathyroid. A very interesting question in recent years has been the possible connection between exophthalmic goiter and the parathyroids. In eight cases of the disease, since Dr. McCallum had had the opportunity to remove the parathyroids, these were small and atrophic looking. In one case, so severe that death took place, no parathyroids were found. The feeding of parathyroids has, so far, however, not given satisfactory results. One patient under Mossu's care did improve as the result of parathyroid feeding.

**Fat Diet and Acetone Excretion.**—Dr. E. P. Joslin, of Boston, said that Schwartz's observation that diabetics given much fat are more liable to coma led to the suggestion that the fatty acids were mainly responsible for the production of the toxic substances which caused this form of coma. In animals the secretion of acetone is very much increased when food is stopped. On the first day of starvation ten times as much is excreted as on normal diet, and the next day thirty times as much. An almost corresponding increase of acetone excretion takes place when oleic acid is given in considerable quantities. The same result takes place when sodium palmitate is administered freely. The practical question occurs, then, should there be a decrease in the fat of diabetics. This would seem not to be justified by the present state of experimental observation. When it is resolved, however, to increase in the fat in the diet of diabetics this should be done gradually in order to avoid the danger of the acid intoxication.

**Pulsating Empyema Necessitatis.**—Dr. Frederick P. Henry, of Philadelphia, reported in full a case observed twenty years ago, and mentioned in a number of discussions in which as the result of empyema three pulsating tumors were found on the thoracic wall. Only one other case, with as many pulsating tumors, has been described by Chvostek. The largest of the tumors was in the left mammary region, the smallest in the axillary region and the medium-sized tumor low down posteriorly. The conditions for such a pulsating tumor are evidently a large effusion on the left side with a strong healthy heart adherent through its pericardium to the lung, Dr. Henry has been able to find fifteen additional cases in the literature of pulsating empyema, making the number of reported cases now eighty.

**Pulsating Serous Pleurisy.**—Dr. A. McPhedran, of Toronto, Ont., described a case in which there was a distinct pulsating area in the left axillary region. At first this was thought to be a large indurated heart. When the patient was turned on the right, pulsating was noted below the scapula but disappeared in the axillary region. The heart was evidently fat-fastened firmly in position and did not shift with the movements of the patient. Dr. Henry said a case of what is probably empyema necessitatis simulating an aneurism that has ruptured into the pleural cavity is under his observation at the present time. The point of pulsation in this case is between the scapula and the vertebræ.

**Extensive Pulmonary Infarction.**—Dr. J. J. McKenzie, of Toronto, reported, in connection with Dr. A. McPhedran, a case in which there was complete infarction of the middle and lower lobes of the right lung and part of the upper lobes, with a small infarcted area in the lower lobe of the left lung. The pulmonary artery above the valves contained a number of yellow spots. There was endarteritis, quite a number of small vessels which were everywhere thrombosed. The cause of the condition was evident from the liver which had biliary gummata.

Dr. Tyson, of Philadelphia, exhibited a specimen showing triple valvular lesions with the most characteristic stenosis at the tricuspid orifice. The most important clinical symptom in this case was the presystolic murmur, pointing to an affection of the mitral valve though the aortic and tricuspid valves were extensively affected.

## FOURTEENTH INTERNATIONAL MEDICAL CONGRESS.

*Held at Madrid, Spain, April 23 to 30, 1903.*

(Continued from Page 993.)

### GENERAL PAPERS.

**Local Anesthesia.**—Dr. Reclus, of Paris, read a paper on local anesthesia, citing 6,000 operations which he had practised without accident.

Gpreafico, Esquerdo and Lozen, Spanish surgeons, discussed the same topic.

**Surgery of the Posterior Mediastinum.**—Dr. Faure, of Paris, said that the posterior mediastinum had hitherto been the only portion of the body inaccessible to operation. The excision of the posterior portions of the middle ribs, the route of Nassiloff, Quenu and Hartmann, affords meager access to that portion of the mediastinum lying at the level of the root of the lung and below it. All the rest is inaccessible. If now the first rib be also removed, the shoulder may be retracted, and the entire mediastinum is amply exposed, even the apex of the lung lies free. He has thus removed 12 cm. of the esophagus for tumor. Foreign bodies in the trocha, bronchi and esophagus, and abscesses are easily accessible. The thoracic duct and azygos vein are the structures to be avoided.

**Surgery of the Stomach.**—Prof. Cardenal, of Barcelona, said that surgical intervention was indicated in every case of gastric disease in which the pyloric trias pain, vomiting and retention was present. This trias may be the result of organic disease, but also of a functional condition, as in the pyloric spasm of hyperchlorhydria, with secondary dilatation of the stomach and motor insufficiency. In any case, operation offers the only relief. All doubtful gastric conditions, and cases of probable tumor demand an exploratory, which should comprise not only the exterior but also the interior of the organ.

**Serum for Tetanus.**—Dr. Blumenthal, of Berlin, says that the function of the serum is simply to bind the poison before it has had an opportunity to attack the cells of the cord. Once this has occurred, the serum is powerless. It is therefore rather a prophylactic agent than a cure. When the cord has "bound" enough of the poison to constitute a fatal dose the antitoxin is useless. If it is given before the case has advanced thus far it is capable of checking all further advance. Prophylactically it should therefore be given early in all suspicious cases; in cases infected through wounds with earth, in suspicious abortions, in military surgery. The best route is dural injection.

**Re-Education in Motor Disorders.**—Dr. Faure, of Paris, said that he had experimented on 126 inmates of the Institut de Re-education Motrice at La Malon. The cases of tics, spasms, cramps, chorea, abasia and astasia, atrophy and peripheral paralysis, were all either greatly improved or cured. The hemiplegias, paraplegias and paralysis agitans, were not benefited. Of 86 cases of locomotor ataxia, 6 deteriorated; 19 were deprived of treatment through want of moral energy, intelligence, or other reasons. Nineteen have been practically cured of their ataxia; in 40 a varying degree of improvement has been obtained. The prognosis in women is much worse than in men The age of the patient and the duration of the ataxia do not affect the prognosis. The chief factors are the intelligence and energy of the patient. Coincidently, there is an improvement in the appetite, weight and good nature.

**The Cure of Pulmonary Tuberculosis.**—Dr. Mennier, of Pau, on the basis of his vast experience, asserted that the hygienic methods of treatment, rest, fresh air and diet, which had been so loudly vaunted in the section, were to be regarded simply as accessories in the majority of clinical forms of the disease. These forms are, especially, the acute pneumonic relapses of chronic phthisis in the chronic common type, in the congested attacks with fever, in the relapses due to mixed infection. The word "cure" is almost invariably abused, and used synonymously with the disappearance of bacilli from the sputum. That these "cures" are not radical is generally evidenced by recrudescences, often fatal, if the individual happens to fall a prey to grip. The prophylaxis of tuberculosis is the avoidance of grip in great measure. Therefore it is that the sulphurous atmosphere of Pau, so inimical to Pfeiffer's bacillus, is beneficial in consumption. He recommends Pau for acute, but not for chronic forms.

Prof. Brouardel, of Paris, admitted the inefficiency of hygienic measures taken alone, but urged that sanatoria were indispensable in the proper management of the cases.

Prof. Espina, of Madrid, insisted on the value of cinnamate of soda. The thermal treatment may have some value, but the altitude is of chief importance.

Dr. Thous, of Bordeaux, insisted on the value of salts of gold, which are both antiphlogistic and antibacillary. Dr. D. Quintana regretted that Prof. Mennier had depreciated the value of physicotherapy. Prof. Mennier, in closing, reasserted that the two chief problems of phthisiotherapy were the transformation of acute into chronic cases, and the prevention of grip, and in this cause both medicinal and hygienic measures were necessary.

**Treatment of Clubfoot.**—Dr. M. Angel, of Madrid, said that the treatment of clubfoot, to be efficacious, should be elective of all methods, which were the complements of one another. Radical therapy directed to the causes of the condition, comprised massage, electricity and exercise for the deficient musculature, also tenotomy, tendon transplantations and plastics. The orthopedic apparatus are to be regarded as necessary adjuncts of these procedures, inasmuch as they insure that the ground which has been so gained will not be lost through the organic tendency to resume habitual positions.

Prof. Vulpius, of Heidelberg, said that it was almost never necessary to resort to operation for congenital clubfoot. At almost every age it was subject to bloodless redressment by hand or machine. Only in rare refractory cases is operation indicated. Paralytic clubfoot should never be treated by means of orthopedic apparatus, which are at best a burden. In cases in which healthy muscle remains, one may do a transplantation. If no healthy muscle remains one may partially fix the joint by shortening the tendons, or, preferably, immobilization by arthrodesis.

**Tuberculosis of Peribronchial Glands Simulating Aneurism.**—Dr. Scognamiglio, of Naples, related a case in which there was compression of the trachea, cough, diminution of the pulse in the left carotid, subclavian and radial arteries, dulness in the left subclavicular region, with a blowing murmur. The tubercle bacillus was present in the sputum. The patient died of asphyxia. Autopsy revealed tuberculosis of the left lung and compression of the mediastinal structures by tuberculous glands.

**Cirrhosis of the Liver in Chronic Tuberculosis.**—Dr. Scognamiglio, of Naples, insisted that hepatic cirrhosis was a far more frequent accompaniment of chronic pulmonary tuberculosis than is fatty degeneration. He had repeatedly observed it and believes that it may contribute to the late digestive and intestinal disorders of the disease. Every form of chronic specific infection, malaria, syphilis, alcoholism, may produce cirrhosis, which varies only in the grade which it attains, before the primary intoxication itself terminates life.

**Effects of X-Rays.**—Dr. Simancas presented no new facts.

**A New Intestinal Parasite.**—Prof. Ginart, of Paris, said that he had identified in 1841 a new infusorium, *Chilidon dentatus,* Dujard, in the dysenteric stools of a Parisian woman. This discovery raises the number of intestinal infusoria as etiological factors in disease to five.

**Experimental Pathology of Appendix.**—Dr. Ssobolew, of St. Petersburg, said that he had performed ligature of the base of the appendix in new-born rabbits, and that in consequence thereof the organ had failed to develop, especially the follicles. If now a secondary communication were established with the ileum, the organ regained its normal condition. The same phenomenon occurs whenever one restores the conduits of any system of glands secondarily atrophied in consequence of the occlusion of their ducts. In all probability, therefore, the organ has, at least in herbivora, a functional value, probably the preparation of the ferment enterozymase.

**An Anthrax Serum.**—Dr. Deutsch, of Budapest, described the work of the Jenner Institute of that city in its successful attempt to immunize against anthrax. The serum is gained from horses, which must be hyperimmunized. Beginning with a dose of 0.20 of first vaccine, the horses should be educated to stand the enormous dose of 50 c.c. of a virulent bouillon culture of anthrax. This process demands six months. The serum injected into a rabbit protects it against a dose ten times as great as that which produces death in control animals within twenty-four to thirty hours. The serum in doses of 10 c.c. is capable of curing rabbits already infected. Most important of all, cattle stricken with anthrax, which almost invariably perish, are cured in 66 per cent. of the cases by the injection of 40 c.c. of the serum.

**Bile Concretions in Intercellular Canaliculi of Liver.**—Dr. Cornil, of Paris, described hyaline concretions occurring in biliary obstruction in liver.

**Primary Intestinal Tuberculosis.**—Dr. Keller, of Germany, said that he had found this condition very frequently in children at autopsy, but not in adults, in whom it is a secondary infection. This fact seems to indicate that the causative agent is milk, since that constitutes the chief element of difference in the diets.

Drs. Seras, Garcia, Tsearra discussed the paper, agreeing with the speaker that the weight of pathological evidence was against the theory of Koch.

**Origin of Casts.**—Prof. Monti, of Paris, presented the following conclusions gained from the histological examination of 400 kidneys of men, and from animal experimentation. The striated border of the tubular epithelium is an essential and invariable feature, and not merely a functional condition. It is present in hibernating animals. The epithelium of the tubules may be thoroughly degenerated, as in general intoxications, yet there is no cylindruria, and vice versa. On the other hand, even limited lesions of the glomeruli invariably result in the production of casts.

Dr. Del Rio, of Madrid, said that tubular epithelium must certainly be considered of importance in the production of the symptoms of nephritis.

Dr. L. Garcia asked for an explanation of the presence of epithelial casts.

Dr. Monti repeated that casts were due to the passage of albumin through the injured glomerular epithelium, but that they might be molded and modified in their passage through the tubes.

## CHICAGO SURGICAL SOCIETY.

*Stated Meeting, held March 2, 1903.*

M. L. Harris, M.D., in the Chair.

**Removal of Birth-Marks.**—Dr. L. L. McArthur described a method which he believes to be new for the eradication of vascular blemishes of the integument. As the red color of these marks is due to capillary dilatation, it is necessary to obliterate the capillaries. To do this, he conceived the idea that if, on a plane horizontal to the surface upon which this pigmented area rested, a section was made of the integument in such a way that the entire thickness of the integument would not be destroyed, but that the knife should pass through each capillary loop as it came to the surface, he would then have integument still enough intact to prevent actual perforation of the same, with projection of the connective tissue beneath. After waiting for coagulation of the blood in these cut capillaries, a thin Thiersch graft was applied; all of these cut capillaries would then be obliterated, being plugged with blood-clot, which, becoming organized, would simply destroy the pigmented appearance of such a mark. Eighteen months ago a young woman presented herself with a very pronounced mark that extended over the forehead from the scalp to the eyebrow, including the eyebrow, the upper eyelid, and a portion of the malar prominence of the cheek. He adopted such a method as he described on a surface which had already received electrolysis and various other methods for the destruction of the vessels and color without avail, and succeeded in obtaining an excellent result. The patient was exhibited.

**A Case Two Years After Removal of Carcinoma of the Stomach.**—Dr. McArthur again presented a case exhibited to the Society several months ago. The patient was a man from whom he had removed a portion of the lesser curvature of the stomach and the anterior wall, with a portion of the inferior surface of the left lobe of the liver, for carcinoma. He presented at that time the microscopical slides, which were pronounced carcinomatous, as the tissue could be seen involving the liver tissue without any capsular line of demarkation between the normal liver tissue and the new growth. At a previous meeting of the Society, the opinion was expressed that the man would soon succumb to a rapidly recurring carcinoma. He had not been convinced, as he recalled the cut surface of the liver from which the growth was excised, that he removed all of the growth. He knew that he had removed all of the stomach growth. The man was now doing work at St. Luke's Hospital as an employe there, and has increased in weight from 117 pounds at that time to 135 at present.

**Fracture of the Patella, with Suture of the Aponeurosis.**—Dr. Daniel N. Eisendrath exhibited a man who, while in an intoxicated condition, fell backward and down a flight of ten or twelve steps. The patient, in falling and trying to save himself, sustained a fracture by indirect violence, tearing the patella into two parts. There was a space large enough between the ends of the patella to admit his little finger (a distance of one-quarter to half an inch). At the time he operated, it was his intention to show the students the method of operating upon fractures of the patella, *i.e.*, to open the joint, and either wire the fragments or suture the patella with kangaroo tendon. As the drill would not work, he sutured the aponeurosis. He found the aponeurosis had been turned in at the edges of the fracture, and the fascia, the periosteum and aponeurosis were turned in in a typical manner between the edges of the fracture. He pulled them out, brought the fractured ends closely together, and inserted four sutures of kangaroo tendon. The suture was passed through the aponeurosis on both sides of the patella, and two sutures were passed through the periosteum of patella itself. The accident to the patient occurred on Nov. 12, 1902. After the operation the patient was placed in a plaster-of-Paris cast. He operated the day following the injury. The incision was made transversely over the fracture. No opportunity was lost to resort to passive exercise and massage to recover function of the joint as well as possible six weeks after fracture. An X-ray picture taken six weeks after operation showed absolutely no separation of the fragments. The functional result is all one could desire.

**Some Observations on the Surgery of the Kidney.**—Dr. D. S. Fairchild, of Clinton, Iowa, contributed this paper, by invitation. The questions which appealed to the author and to others of limited opportunities for observation were (1) in relation to trauma of the kidney not involving open wounds or wounds that have healed; (2) in relation to suppurative nephritis; (3) in relation to chronic degenerative disease of the kidneys. An injury to the kidney, inflicted by a trauma to the back or abdomen, which does not produce a crushing lesion, is not often attended by symptoms of sufficient gravity to require immediate operation, and are serious mainly in the remote effects. The sequelæ which bear an intermediate relation to the injury are suppuration, peritonitis, uremia, and persistent or intermittent hemorrhage. The more remote effects are aneurism of the renal artery, suppuration of the kidney, and movable kidney.

Scerou has collected six cases of more or less complete anuria following injury, and only one recovered. In five of these cases the other kidney was normal. A considerable number of cases of injury to the kidney, with hematuria, have come under the observation of the essayist, unattended with open wounds, or with symptoms of such severity as to require an immediate or early operation. Cases were cited in point.

Aneurism of the renal artery or its branches, as a consequence of subparietal injury, is a very rare condition, in that Morris, of London, has been able to collect but 19 cases. The difficulty of making an exact diagnosis of this condition, its great danger, together with the fact that it occasionally occurs as a late sequence of an injury, emphasizes the importance of an early operation in cases where a serious doubt exists as to the nature and extent of the damage which the kidney has sustained. The presence of a tumor in the region of the kidney appearing after an injury is significant of some secondary involvement, either of the kidney itself or the perinephritic tissue. If the disease has its origin in the kidney, it will usually be recognized by the presence of pus in the urine, but in some cases the ureter may become obstructed, and the pus disappear early, leaving an uncertain and somewhat obscure history for the surgeon to base a diagnosis on, or pus may never be discovered in the urine at all, on account of an early blocking of the ureter. These conditions were illustrated by two cases, cited in the paper.

Diffuse suppurative nephritis of the more chronic interstitial forms is not infrequently overlooked. In one case which came under the writer's observation the condition was not discovered until the man was examined for life insurance. The traumatic origin of floating kidney has been very thoroughly studied by Dr. M. L. Harris, and the paper published by this observer is well worthy of perusal. The speaker has examined a considerable number of alleged cases of loose kidney from injury, but in none was the organ abnormally movable. These observations may have been coincidences, for it is true that persons having an unsuspected floating kidney may be injured and the subsequent examination reveal the fact.

**Hydronephrosis.**—Dr. Arthur Dean Bevan reported the case of a man with an enormous hydronephrosis of the left side. A tumor was found occupying the entire left half of the abdominal cavity, with the descending colon distinctly in front of the tumor, as outlined by a distinct, sausage-shaped sympanitic mass in front of the tumor. The man was passing a small amount of urine, was sweating profusely, and the quantity of urine passed from the bladder never exceeded 800 c.c. in twenty-four hours in the few days while he was under observation. Under nitrous oxide gas, Dr. Bevan made a nephrotomy, opened a large hydronephrotic sac, and allowed a gallon of fluid to escape. The fluid was clear and did not contain any pus to the gross appearance. Most of the fluid escaped immediately after making the incision, as it was under considerable tension. After the operation the man passed about two ounces of urine in six hours, then there was dribbling of urine for twelve or eighteen hours afterward, and another dribbling about twenty-four hours afterward from the urethra. After that he did not pass a single drop of urine from the bladder. In the wet dressings from 50 to 60 ounces of fluid was found daily. The patient was watched for a number of weeks; his general condition improved so as to warrant making a radical operation, and under chloroform (second operation) the author exposed the hydronephrotic sac. After exposing the hydronephrotic sac, he found the ureter running along it, adherent to it, hooked over a small additional renal artery, and descending from this artery downward, there being quite a sharp flexure at the point where the additional renal artery held the ureter up. The renal artery was divided between two ligatures, and the flexure of the ureter relieved. On opening into this hydronephrotic sac through a two-inch incision, and by turning it inside out with the finger, he found the ureter was no longer patulous. Then, by means of a Heineke-Mikulicz operation, like a pyloroplasty, the opening between the ureter and the pelvis was enlarged. An opening was made by dividing the ureter and pelvis for three-quarters of an inch longitudinally, and uniting them by stitches. An interesting point was the position of the renal artery which was probably the cause of the hydronephrosis. The man had only one functionating kidney.

Dr. L. L. McArthur referred to cases which belonged to the group classified as the interstitial mycoses of the kidney. In these there was really not a suppurative process in the kidney, but a bacterial process involving the substance proper of the kidney, as seen sometimes in the microscopic sections presented by pathologists, with the bacteria stained in the substance proper of the kidney, the process being relieved by splitting of the capsule and free drainage of the kidney. Such an experience he has recently had in a case of colon bacillus infection of the right kidney, in which a pure culture was found, in which the temperature was so high (106° F.) and the chills so severe as to warrant surgical interference for the relief of the patient, who was suffering not only from toxemia, but from intense nephralgia. He was extremely chagrined to find no pocket of pus in the pelvis of the kidney, yet his patient improved from simple section, and opening of the pelvis of the kidney, with no stone found, no collection of fluid in the kidney, the kidney engorged to more than 50 per cent. of its own normal volume.

Dr. Daniel N. Eisendrath narrated the case of a boy who fell down a flight of steps and immediately afterward had severe hematuria, which lasted for three days. He did not see the boy until two weeks later, when complaint was made of a dragging sensation in the right side of the abdomen, where the floating kidney could be felt. In consultation with Dr. E. W. Andrews, he cut down upon the kidney, and found it was displaced below the pole. The hilus of the kidney was about the level of the umbilicus, and the kidney was anchored in place. The boy developed traumatic neurasthenia, and passed from under his observation. Here was a distinct traumatic displacement of the kidney. One could see hemorrhages into the perirenal tissue at the time of the operation.

**The Drowning of Patients in Fecal Vomit During Operations for Intestinal Obstruction and Septic Peritonitis.**—Dr. E. Wyllys Andrews contributed this paper. He stated that his attention was called a few years ago to a kind of accident hitherto unknown to him, namely, the loss of life by drowning in fecal vomit, and he reported two such cases at a previous meeting of the Society. A patient may be killed by drowning in fecal vomit while unconscious on the operating table or semi-conscious after anesthesia. The utter collapse which follows ileus of any origin favors this accident of flooding the air passages, so that it probably occurs rather often. He did not wish to invoke this as a sole cause of sudden death or to ignore such other causes as toxemia, myocarditis, embolism or pulmonary edema, but he described two plain cases of death by suffocation which he had seen himself. After reporting these cases, several members of the Society brought him verbal reports of similar deaths which they had personally seen. Dr. Andrews drew the following conclusions: (1) Flooding of the air passages by fecal vomit is a real danger and probably has caused many unexplained deaths; (2) resuscitation is impossible or very difficult; (3) the fluid may flow by gravity through the relaxed stomach, sphincters, directly out of the intestine. where it has accumulated in large quantities; (4) the accident ocurs with great suddenness and with a stomach supposedly empty. The suffocation may be so complete that no outcry is made, and may not be noticed by the patient; (5) it may occur as late as an hour after anesthesia, or at any time until consciousness is restored; (6) we have no evidence that it can occur during consciousness, even in extremis; (7) after septic laparotomy, patients when returned to bed should be watched without even momentary intervals to full consciousness; (8) a suggestion made to him by Dr. McArthur, that as many as possible of such cases be operated under cocaine anesthesia, seems to him sound in the light of the above report.

**Pharyngolaryngectomy.**—Dr. A. E. Halstead exhibited a specimen of larynx, pharynx and tonsil, which he removed last April from a man at the Chicago Policlinic Hospital. The patient was forty-five years of age. The carcinoma started in the larynx just above the vocal cords, and involved the epiglottis, pharynx and tonsil. The first operation was a preliminary tracheotomy, which was done because of the dyspnea from which the patient was suffering. This preliminary tracheotomy was not performed by himself. It was three weeks later before the radical operation was done. The trachea was plugged by the Trendelenburg balloon canula, and as soon as the trachea was cut through, the canula was removed and an ordinary tracheotomy tube inserted. The anesthetic was given through this, the previous tracheotomy opening having been plugged. The larynx was completely separated, together with the anterior wall of the esophagus, the side of the pharynx, the tonsil, half of the hyoid bone and epiglottis. A plastic operation was performed on the anterior wall of the trachea and the wound closed. A stomach tube was introduced and fastened at the upper angle of the wound. The second day after operation the patient became delirious, tore out the stomach tube, and opened up the wound. He made a very fair recovery from the operation, was up and around at the end of a week, and lived for eight months. The patient died from pneumonia caused by exposure.

## PHILADELPHIA OBSTETRICAL SOCIETY.

*Stated Meeting, held March 5, 1903.*

The President, J. M. Fisher, M.D., in the Chair.

**Case of Postoperative Tetanus with Especial Reference to the Focus of Infection.**—Dr. L. J. Hammond introduced this subject. The case is that of a female, twenty-two years of age, the daughter of a farmer, whose duties in addition to household work included milking cows, feeding pigs and attending to chickens. Previous to her arrival in Philadelphia she had suffered from an attack of (gonorrheal ?) peritonitis. Three days after her arrival in the city, the patient complained of toothache and swelling in the left cheek, due to eleven carious teeth. This attack terminated in an alveolar abscess, which was incised and cleansed of a considerable quantity of pus. Two days after this had healed, an abdominal section was done for a bilateral pyosalpinx, ovarian abscess on one side and a multiple cystic ovary upon the other. The abscess sacs were removed without rupture. The patient progressed very well until the sixth day when she complained of strange feelings about the eyes. Four hours later she complained of an intensity of this ocular condition with stiffness of the jaws. Dr. Hammond saw her within an hour after the latter was noted, and found the patient presenting a risus sardonicus. The abdominal incision was examined and found united without any irritation. Trismus grew rapidly worse and in five hours after he saw her it was impossible to separate the jaws, and at the end of two more hours the muscles of the neck were all completely spastic. No other muscles were spastic until about four hours previous to death which occurred 27 hours after the first symptoms were noted when there was noticeable contraction of the muscles of the back and abdomen during the paroxysm only. Morphine, eserine, bromides, chloral and the tetanus antitoxin were all employed. Owing to the tightly closed mouth a culture could not be obtained from the teeth cavities, hence a positive bacteriological proof of tetanus could not be obtained, but the knowledge of the habitat of the tetanus bacillus and the mode of life of this farmer girl, would tend to convince one that she had become infected with tetanus germ at her home, and that the extensive caries of the teeth should furnish a most vulnerable storehouse for its concealment. As the period of incubation of tetanus is 9 to 21 days, the germ could not have been introduced at the time of operation.

Dr. Joseph Sailer, in discussing this subject, said that some years ago, during a course in bacteriology at the Pasteur Institute, he was much impressed by a remark made by Roux upon the treatment of tetanus by antitoxic serum, that there were two classes of cases; the chronic, all of which recovered, and the acute, none of which recovered. When Dr. Hammond asked him to see this case he had given a million units of the antitoxic serum, and Dr. Sailer felt that there was really very little more to be done. His experience is that Roux's remark regarding recovery is pretty nearly true; that is to say, chronic cases recover rapidly under any treatment, and other cases, no matter how early the treatment is instituted or how vigorously carried out, die inevitably. Of course, the most important thing one can do under these circumstances is to arrive at some conclusion in the early stages as to whether there is any likelihood that a case will get well. There is an old rule regarding tetanus, that if the symptoms commence in the upper part of the body, particularly in the head, the prognosis is grave. If they commence in the lower part of the body the prognosis is much more favorable. It is easy to theorize why this should be so. If the lesion is in the lower part of the body the toxin reaches the less vital centers of the spinal cord and there is a progressive although very slow immunization of the nervous system so that by the time it reaches the upper portion of the nerve cells are able to resist injurious influences. So far as he knows there is no evidence that such a theory has any actual basis of truth. Of course, the question of the treatment of tetanus is a most alluring one. The antitoxin is such a trustworthy antidote to the tetanus toxin that Ehrlich and Morgenroth could work out their theories of immunity with mathematical values, which is difficult with antitoxins of many other organisms. It would seem, therefore, that if there is any disease in which antitoxin ought to be efficient, it is this one of tetanus. Yet, excepting in the cases of some of the smaller animals whose bodies can be thoroughly saturated with antitoxin, even experimentally it has no curative power, for the reason that the toxins are united with the cells by intermediary bodies and form combinations that cannot be neutralized by the antitoxins as the toxins in the blood are thought to be neutralized by the antitoxin of diphtheria.

In regard to Dr. Hammond's case, when Dr. Sailer saw it, the symptoms were most pronounced in the face and the entire appearance of the patient formed a most typical clinical picture. Even at that time he was compelled much against his will to look upon the prognosis as hopeless because the patient was beginning to have cramp of the respiratory muscles. The sensation of a band around the chest is a characteristic symptom; and almost the gravest met with in traumatic tetanus, and indicates that the fatal outcome cannot be long delayed. The tetanus bacillus stays in the original wound without multiplying, and liberates a toxin that travels along the nerve sheaths to the parts of the central nervous system from which the influences which move special muscles arise. As the peripheral neurons are the parts first affected they appear to be also the parts in which the symptoms are first manifested. The fact that this patient's symptoms began in the eye and extended to the face led him to suspect some other focus of infection than the abdominal wound, and it seems probable that there was infection in the jaw. Cultures would not have been of much value. A few investigators have been able to obtain the tetanus bacillus from the original wound. In one case the bacillus was said to have been obtained from the neighboring lymph glands, but the majority of observers, no matter how carefully investigations were undertaken, have been unable to find it and for pretty obvious reasons. It does not multiply. It appears in small numbers, and usually is a rather difficult germ to grow.

It is hardly worth while to mention that there is probably no germ more difficult to destroy than the tetanus bacillus. It is more difficult than the anthrax because it is anaerobic and it fails to grow in the intervals of fractional sterilization, unless put under anaerobic conditions. The spores can be boiled for 24 hours without being disturbed. A few instances of aerobic tetanus bacilli have been described. He thinks if methods could be adopted by which the tetanus bacilli could be killed all further measures would be unnecessary, because no other organism can resist the condition required to destroy it. He has been interested in the gelatin treatment of hemorrhage. In going over the literature it is surprising to find how frequently patients injected with gelatine for checking hemorrhage have died of tetanus. Some five or six cases are now on record. The reason is that the tetanus bacillus in gelatine media cannot always be gotten rid of by boiling at intervals.

He can only agree with Dr. Hammond in his idea of the case that it was an infection probably carried with the patient from her home and lodged in the tooth. He should be rather inclined to differ with him in his view that the depressed state of the patient had promoted the infection. He should think that perhaps the latent focus had been aroused by the suppuration in the jaw, or even by the operation upon it.

Dr. F. C. Hammond said that Coe of New York in 1901 reported two cases of tetanus following aseptic celiotomy. One case was similar to the case reported by Dr. Hammond as regards the pelvic condition, bilateral pyosalpinx (gonorrheal). In this case tetanus developed during the latter part of the third week. The patient had progressed so well from the operation that she was permitted to lie upon a couch on the sixteenth day. On the twenty-fourth day, while around the ward, her legs "gave way," precipitating her to the floor. For a few days previous there had been some difficulty in swallowing and stiffness of the muscles of the neck. Owing to her known hysterical nature, these were considered of a hysterical character. Subsequently sufficient symptoms developed to warrant a diagnosis of tetanus. The patient died on the thirty-sixth day after the operation, and the twentieth after the appearance of the initial symptoms. In the second case, stiffness of the muscles appeared on the ninth day, and the patient felt inclined to be hysterical. A diagnosis of hysteria was made. On the next day marked tetanic symptoms appeared and the patient succumbed on the eleventh day after the operation. In both cases an early diagnosis of hysteria was made, which was verified by a consultant. The diagnosis of tetanus was not made in either case until trismus had developed. It hardly seems possible in the modern day of aseptic and antiseptic surgery that we should look for tetanus as a complication of abdominal section.

(To be Continued)

## BOOK REVIEWS.

The Medical Epitome Series. Obstetrics. A Manual for Students and Practitioners. By W. P. Manton, M.D., Adjunct-Prof. of Obstetrics and Gynecology, Detroit College of Medicine, etc. Series edited by V. C. Pedersen, A.M., M.D., Clinical Assistant in Surgery at the N. Y. Polyclinic Medical School and Hospital, etc. Illustrated with eighty-two engravings. Lea Brothers & Co., Philadelphia and New York.

This excellent little book is designed to act as a combined manual and quiz-compend on the subject of Obstetrics, and will doubtless succeed as such. In view of the fact that there are so many such books, it would be difficult to assign a reason for its existence, but for the fact that it is but one of a series of medical subjects, and must of necessity be written to make the set complete. Still it is easily as good as the majority of its fellows and will serve for the object that its publishers had in view.

At the end of each chapter there is appended a list of good practical questions on the subject-matter contained in the text, and these should prove useful to the quiz-master.

Malarial Fever. Its cause, prevention and treatment. By Ronald Ross, F.R.C.S., D.P.H., F.R.S., and Walter Myers, Lecturer, Liverpool School of Tropical Medicine. Ninth edition. Longmans, Green & Co., New York.

Dr. Ross is known as one of the foremost investigators of the subject of malaria, and the present small brochure of 68 pages is an enlarged edition of one of his lectures, given before the Liverpool School of Tropical Medicine. It is a very straightforward simple account of the different factors concerned in the diagnosis, prevention and treatment of malaria, and should be in the hands of every physician who lives in a malarial district.

Essays on Clinical Medicine. Being Reprints of Papers Published at Various Times in the "American Journal of the Medical Sciences." By Beverly Robinson, A.M., M.D. (Paris), Clinical Professor of Medicine at University and Bellevue Hospital Medical College, etc. William J. Dornan, Philadelphia.

These essays of Dr. Robinson are well worthy of preservation in the separate form he has given them. A number of them are eminently practical. The essay on Creosote as Remedy in Phthisis Pulmonalis gives the history of that drug since 1830, for though we are sometimes accustomed to think of creosote as a recent suggestion of tuberculosis of the lung, it has been used for the treatment of that disease for nearly three-quarters of a century. The essays on The Etiology and the Treatment of Certain Kinds of Cough, On Prognosis in Heart Disease and A Study of Some Cirrhoses of the Liver, deserve careful reading by all those who are especially interested in these subjects.

The Internal Secretions and the Principles of Medicine. By Chas. E. M. Sajous, M.D. Volume I. F. A. Davis & Company.

This is a monumental work of over 700 pages, devoted almost entirely to the study of the thyroid and the adrenals. There is a chapter on the pituitary bodies. The author's general thesis is well known: That the adrenals secrete a substance that gives rise to physiological phenomena of oxidation throughout the entire body.

The volume shows an immense amount of work, but unfortunately a corresponding lack of correlation. There is much repetition and redundancy found in almost every chapter and if the author had given us a work of 250 pages we believe it would have been a masterpiece. As it is, however, very few of us will take the trouble to read it, as it is such a pot-pourri, but withal a most interesting one, and one well worthy of a more systematic handling. We congratulate the author on his industry and wish the book the success which it fully merits.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Professor Dr. Carl von Noorden, Physician in Chief to the City Hospital, Frankfort a. M. Part II. Nephritis. E. B. Treat & Company, New York.

In an introductory note to the present volume the American editor says that Professor von Noorden's treatment of the subject of nephritis, as outlined in its pages, is bold, original and somewhat iconoclastic. As the distinguished German authority on metabolism has exploded the myth so long accepted that the light meats are safer than the dark ones in nephritis, as he has questioned and even somewhat disproved the theory that milk is the best diet in all cases of nephritis and that indeed in many cases of the disease the ingestion of large quantities of fluid should be rather restricted than encouraged, it is easy to understand that this little volume will be of special interest to those who realize their lack of knowledge of the important subject of nephritis, ever in recent years growing more serious for American practitioners. A very interesting feature of Professor von Noorden's work is his suggestion of a reduction of the proteids allowed in the diet during nephritis, as the sugars are reduced in diabetes, with the idea that eventually a tolerance for more proteid material may be acquired.

## BOOKS RECEIVED.

Essays on Clinical Medicine. By Dr. Beverly Robinson. 8vo, 171 pages. W. J. Dornan, Philadelphia.

Uterine and Tubal Gestation. By S. W. Bandler. 8vo, 159 pages. Illustrated. Wm. Wood & Co., New York.

Materia Medica for Nurses. By Dr. J. E. Groff. Second edition. 12mo, 169 pages. P. Blakiston's Son & Co. Philadelphia.

Bacteria in Milk and Its Products. By Dr. H. W. Conn. 12mo, 305 pages. Illustrated. P. Blakiston's Son & Co. Philadelphia.

# THE MEDICAL NEWS.

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## ORIGINAL ARTICLES.

### COLCHICUM IN THE TREATMENT OF GOUT.*

BY CHARLES C. RANSOM, M.D.,
OF NEW YORK;
VISITING PHYSICIAN, CITY HOSPITAL.

In these days of advanced chemistry, and pharmacology, when the attention of the therapeutist is being constantly directed to the use of new remedies, and our offices are flooded with samples of them, there is a tendency to overlook the old ones, and to forget for the time their value and the place to which they are rightfully entitled.

It is wholesome, I think, occasionally to take up the study of some of these old remedies, to review their history, and compare the results obtained by the earlier observers with those of our own time to see what if any advances have been made in the methods of their administration, and to learn, if possible, with the added light of our better knowledge of disease, the manner of their action. Thus we may determine if they are really entitled to hold their own or if they may not be properly supplanted by something better and more effectual among the recent creations of the laboratory.

This is my excuse for taking up your attention this evening with a consideration of colchicum and its use in gout.

In the year 580 Alexander of Tralles wrote of the great value of colchicum in arthritic affections, and it was also recommended later by Ægineta, Avicenna, Serapion, and other distinguished Greek and Arabian physicians. So great was the repute in which it was held in these days that it was sometimes called anima articulorum, or the soul of the joints, because they believed it to be "very efficacious in scouring the mucilaginous glands, and preserving them free from the lodgment of such gritty matter as occasions the gout and arthritic complaints."

It was under the name of Hermodactyl that colchicum was known at that time, and there is every reason to suppose that the hermodactyl of the ancients is identical with the hermodactyl brought from oriental countries in modern times, which was regarded by Pereira as having consisted of the corms of some variety of *Colchicum autumnale*, and by others of having been a variety of *Colchicum variegatum*. The hermodactyls have not been subjected to the test of physiological experiment in this country, though from the description of those employed in the treatment of joint affections by Paulus Ægineta it seems that they resembled in their action our ordinary colchicum, for he says, "Some, in the paroxysm of all arthritic disease, have recourse to purging with hermodactylus, but it is to be remarked that the hermodactylus is bad for the stomach, producing nausea and anorexia, and ought therefore to be used only in the case of those who are pressed by urgent business, for it removes rheumatism quickly and after two days at most, so that they are enabled to resume their accustomed employment."

Following this time there seems to have been a considerable period when colchicum was practically unknown as a remedy in gout, and it was not until 1763 that it again received attention as a specific. Sydenham in his classical treatise on gout, written in 1650, does not mention it. Nicholas Culpepper, who published in 1653 a materia medica and treatise on disease, gives 54 different remedies for gout but does not mention colchicum, nor hermodactyl. Stephen Geoffrey, in his lectures before the Royal College in 1709, refers to the hermodactyls and says, "hermodactyl is the bulbous root of a kind of colchicum which is different from the root of the common colchicum in that it remains white when dried" . . . "it is now sometimes mixed with jalap in rheumatism," and in 1720 Hermann Boerhaave in his materia medica speaks of hermodactyl as a "phlegmagogue" and says that it is sometimes used as a cathartic, but is too dangerous for common use.

*Colchicum autumnale* or meadow saffron, the plant which is in use to-day, was introduced as a medicine by Baron Storck in 1763. Soon after its introduction it became a very popular remedy in all affections of the joints and was used extensively by the physicians of that time. On account of its remarkable effect in relieving pain and in cutting short the acute attacks of gout it was soon taken up by the quacks, and various gout specifics were put upon the market the active ingredient of which was colchicum.

The most celebrated of these specifics was the Eau Medicinale, a preparation employed by M. Husson, a military officer in the service of the King of France. Sir Everard Hone, and other prominent physicians of that time were in the habit of prescribing Eau Medicinale and in their writings commended its use, and it owed its popularity among the laity largely to this fact. It was generally believed, and there is very little doubt that colchicum was the basis of this widely used and most excellent remedy, but of course it was to the interests of the quacks to deny it. Charles Scudamore, an authority on gout, in his book on gout and rheumatism, published in 1819, while extolling the value of colchicum in these affections, said and tried to prove that Eau Medicinale owed its value, not to colchicum but to some other very powerful, and much more dangerous drug.

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* Read before the Northwestern Medical and Surgical Society.

After a careful perusal of the chapter devoted to this subject in his book, I am inclined to believe that Scudamore was actuated by a commendable desire to counteract the influence of Sir Everard Hone and those physicians who were in the habit of using and recommending this patent medicine, and to take out of the hands of quacks the treatment of so common a disease as gout. To do this he made an effort to show that the use of such patent preparations as Eau Medicinale, Reynold's specific, and Wilson's specific, which were also very popular at that time, was fraught with great danger. While he, of course, showed that the employment of such remedies in the hands of laymen might be productive of serious results, he failed in proving that they were not using colchicum.

One must not think that the use of colchicum was universally extolled, though the weight of evidence was always decidedly in its favor, for there were those, as there are to-day, who expressed themselves strongly on the ill effects attending the use of the drug.

Dr. Pettit said that it caused gouty attacks to become more frequent and chronic, and Dr. Todd in his clinical lectures, expressed a similar opinion and said that although colchicum shortened the duration of the fits, it also diminished the interval between the attacks and the system got accustomed to its use as it did to opium. Even Paulus Ægineta, to whom I have referred, said of hermodactyl, "it is bad for the stomach, producing nausea and anorexia, and should only be used in the case of those who are pressed by urgent business." Dr. Copeland is perhaps the most rabid of the objectors to colchicum. In his treatise on gout he claims that it produces profound disturbances of various kinds, and goes so far as to say that he has met with instances of hypochondriasis, melancholia, mental delusion amounting to insanity, paralysis and angina pectoris, all arising from the use of colchicum.

Before Storck had the boldness to try the effects of *Colchicum autumnale* on his own person, it was considered a dangerous poison, since then it has often been the subject of experimental study, and its clinical employment has afforded continual opportunities for a discovery of its specific action, but without effect. Our knowledge of it is still purely empirical.

*Colchicum autumnale,* or meadow saffron, is a small biennial bulbous plant, which grows wild, in moist meadows, in England and other temperate parts of Europe. The corm and seed are the portions used in medicine. They yield their virtues to vinegar and alcohol, and contain in addition to tannic acid, gallic acids, starch, sugar, gum, etc., an amorphous alkaloid colchicine, which is soluble in water, and in alcohol, but insoluble in ether.

The colchicine is undoubtedly the active principle of the drug. Taken internally it depresses the cerebral convolutions and the cord, causing loss of sensibility and of consciousness, and diminished reflex excitability; the peripheral sensory nerves being also paralyzed, while the motor nerves and the muscles are unaffected. The activity of the respiratory system is lowered, so that death occurs by asphyxia, and the heart is weakened, so that the pulse may become intermittent, perhaps as a disturbance secondary to that of the respiration.

In small doses it stimulates the secretion of the liver and renders it watery. In large doses it produces nausea, vomiting and repeated purging, and primary acceleration, followed by a reduction in the frequency of the pulse. In excessive doses it is a gastro-intestinal, irritant poison, inducing violent vomiting, uncontrollable diarrhea and collapse.

There are many and diverse opinions as to its effect upon the kidneys and urinary secretion. Biddle says that it augments the flow of urine and increases the excretion of uric acid and urea. Lewins found the urea almost doubled with its use. Hammond found that it increased the flow of urine and the proportion of solids. Storck relates that the administration was accompanied with the passage of vast quantities of urine. C. S. Taylor claims that in the cases observed by him the urine as well as the amount of uric acid and urea were decidedly increased. Chilius and Maclagan both agree that it acts as a direct diuretic.

On the other hand there are many prominent observers who take just the opposite view. Graves and Gardiner affirm that the uric acid diminishes under its use. Fawcett, in a series of 20 cases, reports that in none of the cases is any definite effect to be noted in increasing the excretion of uric acid, in fact the uric acid distinctly diminishes during the period of administration. Garrod made a series of observations covering a large number of cases, and gives the following conclusions based upon his results: (1) There is no evidence that colchicum produces any of its effects on the system by causing the kidneys to eliminate an increased quantity of uric acid; in fact, when the drug is continued for any length of time, it appears to exert a contrary effect. (2) We cannot assert that colchicum has any influence upon the excretion of urea or other solid ingredients of the urine. (3) Colchicum does not act as a diuretic in all cases on the contrary, it often diminishes the quantity of urine, more especially when it produces a marked effect upon the alimentary canal.

My own observations upon this point are as follows:

*Case I.*—W. M., male, aged thirty-five years, has suffered from gout for ten years. Has chronic enlargement of the joints of both hands and feet. Has at times acute exacerbations, but none for some months preceding the observations. The total daily excretion of urine was taken for a period of thirty-four days, the patient being throughout the entire period on a constant diet as regards nitrogenous food so that this influence upon the output of uric acid and urea would be eliminated. The methods employed were the Gowers-Hopkins method for the uric acid and the Kjeldahl method for urea. The results obtained were as follows: Average daily excretion for eleven days *preceding* administration of colchicum: Total amount urine, 2,084 c.c.; specific gravity, 1.016; uric acid, .608 gms.; urea, 28.08 gms.; ratio, 1-53. Average daily excretion for seventeen days *during* administration of colchicum: Total amount urine, 1,681 c.c.; specific gravity, 1.018; uric acid, .674 gms.; urea, 27.24 gms.; ratio, 1-42. Average daily excretion for six days *following* administration of colchicum: Total amount urine, 1,485 c.c.; specific gravity, 1.017; uric acid, .546 gms.; urea, 25.62 gms.; ratio, 1-48.

*Case II.*—D. H., aged thirty years; had primary attack of gout in big toe of right foot three weeks previously. Has been free for ten days. This observation covered 25 days. Average daily excretion for nine days *preceding* administration of colchicum: Total amount urine, 2,366 c.c.; specific gravity, 1.013; uric acid, .301 gms.; urea, 30.72 gms.; ratio, 1-125. Average daily excretion for six days *during* administration of colchicum: Total amount urine, 1,925 c.c.; specific gravity, 1.015; uric acid, .386 gms.; urea, 32.41 gms.; ratio, 1-86. Average daily excretion for nine days *following* administration of colchicum: Total amount urine, 2,050 c.c.; specific gravity, 1.016; uric acid, .403 gms.; urea, 36.00 gms.; ratio, 1-91.

At first thought it would seem remarkable that different observers could obtain such varying results, and one might naturally conclude that the effect of colchicum upon different individuals was not the same. This idea is probably true to so slight a degree that it does not in any way explain the wide variations. It is much more probable that the explanation lies in the different methods employed, many of them so faulty as to be entirely worthless, and in the want of care exercised in the control of conditions which would materially influence results. For example, Maclagan's observations were made from single specimens of urine taken at different times during the day, without reference to the total quantity excreted during the twenty-four hours. Prof. Chelius made some experiments which showed an enormous increase of uric acid but his observations were made on a subject just recovering from an acute attack of gout, a condition which would entirely vitiate the experiment. The ingestion of food stuffs containing a large amount of nitrogen, or of neuclein-holding foods, would influence to a great degree the excretion of both uric acid and urea, and it is likely that in many of these observations no account of this was taken. The observations made by Fawcett, Garrod and myself were made with due attention to all these details, and the results obtained are practically the same. We may conclude, therefore, that the effect of colchicum upon the urinary secretion is at least not to augment it and in fact, if anything, is rather to diminish it, while the excretion of uric acid and urea under its influence, remains practically the same.

The preparations of colchicum which are most widely used, are the wine of the root, the wine of the seed, the acetate, and the alkaloid colchicine. Among the early writers the wine was the favorite form, given either alone, or combined with carbonate and sulphate of magnesia and some aromatic water, as recommended by Garrod. Scudamore preferred the acetate, being convinced by various observations that he made, that "the acetic acid takes up all its active properties and produces the good effect of which the drug in its other forms is capable, and is not chargeable with any one ill consequence." I think that the favorite preparation in use to-day with the majority of physicians is the wine, though for my part I invariably use the alkaloid colchicine, believing that I get better and more constant results with it, with less danger of the disagreeable consequences which often attend the administration of the other forms; besides which it seems to me to be much more reliable and is certainly far pleasanter to take.

The method of its administration differs among its warmest advocates. Many believe that in order to insure its prompt anodyne and controlling effect in an acute attack, it is necessary to exhibit it in fairly large and frequent doses to the point of active purgation, then diminishing it only so much as to keep up frequent watery stools. A recent text-book on therapeutics advises its administration in this way. I do not think that pushing it to this extent is ever necessary, and thoroughly believe that the ill effect upon the heart and the extreme prostration sometimes seen are entirely due to this cause. I quite agree with Dr. Gardiner, who says in his work on gout, "Colchicum never more effectually relieves the patient than when it acts silently and peacefully without producing any evacuation whatsoever, or in any way disturbing the patient's comfort and ease." When the acuteness of the attack has passed, in the interval between attacks, or, in chronic gout, small doses may be advantageously given and continued for a considerable length of time. From various observations I am convinced that the employment of alterative doses of this kind will not only do much toward relieving the discomfort of chronically affected joints, but will also act decidedly in preventing acute exacerbations. Ewart and others object to a long continued use of the drug because of the danger of establishing a tolerance to it and thus losing its aid when an acute attack supervenes, and Garrod objects to it because of its cumulative action. I must confess to never having seen either of these effects though I have often used it for weeks and months at a time. In the book already referred to the author says that care must be exercised in its use lest retrocedent gout should occur owing to the manifestations of the disease leaving the toe and going to the internal viscera. I have seen gout affect the internal viscera, though rarely, but I believe it is much less likely to occur with its administration than without it. It is held by some that organic diseases of the heart either valvular or degenerative are contraindications to its use. In the latter, of course, it should be exhibited with caution, as should any other powerful drug, but need not necessarily be withheld, while in valvular disease, provided compensation is not impaired, there is not the slightest objection to its use. Kidney disease is also considered by some a reason to withhold it. My own experience is quite to the contrary. Many of my chronic gout patients are sufferers from nephritis, and I not only do not hesitate to administer colchicum to them, but in many instances I am convinced that the condition of the kidneys is improved thereby. I have observed in a number of cases a marked diminution in the amount of albumin excreted under the influence of the drug. In one case of nephritis I recorded the daily output of albumin, before, during and following the administration of colchicum. The result was as follows: Average daily amount of albumin for three days *before* administration of colchicum: Total amount urine, 2,160 c.c.; specific gravity, 1.010; amount albumin, 11 per cent.; amount, 256 grams. Average daily amount of albumin for seven days *during* administration of colchicum: Total amount urine, 2,234 c.c.; specific gravity, 1.016; amount albumin, 8 per cent.; amount, 178 grams. Average daily amount for four days *after* administration of colchicum: Total amount urine, 1,822 c.c.; specific gravity, 1.017; amount albumin, 9 per cent.; amount, 168.7 grams.

*How Does Colchicum Act to Relieve and Cure Gout?*—Some have contended that it is by taking out the uric acid from the blood and eliminating by the kidneys. Reliable experiments have shown that there is no increased elimination of uric acid under the influence of colchicum; then too, as a matter of fact, the blood does not contain an excess of uric acid during a gouty paroxysm. Some have suggested that it may act on the nervous system as a sedative, but other drugs sedative in their action have no influence on gout. Others think that it has an elective action on the peculiar structures of the joints implicated in gouty inflammation. The same structures, however, are affected in various other arthritic diseases, notably rheumatism, and it is well known that colchicum has little if any influence in rheumatism. The truth is that so long as we remain in ignorance as to the true nature of gout, we can only speculate as to the modus operandi of the drug, and must be content to employ it empirically, as has been done in the past, with such modifications in its administration as a more careful study of its action and a wider clinical experience with its effects may suggest.

66 West Forty-ninth Street.

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**Anuria Calculosa Treated with the Permanent Catheter.**—A case of anuria occurring in a patient who had repeatedly passed calculi T. Cimino (Policlin. Sez. prat., April 22, 1903) treated by leaving a permanent catheter within the left ureter in which a calculus of unusual size had become lodged. To a reflex dilatation of the ureter in response to the presence of the catheter the author attributes the release of the calculus and reestablishment of the normal flow of urine.

## FOUR MONTHS' EXPERIENCE WITH ANTI-STREPTOCOCCIC SERUM IN PULMONARY TUBERCULOSIS.*

BY S. G. BONNEY, A.M., M.D.,
OF DENVE,R COLO.

The purpose of this paper is to furnish an authentic report of the results of recent observations relative to the influence of an agent, which, several years ago, was used by the writer and discarded as of no practical utility. Its present employment in carefully selected cases of pulmonary tuberculosis is found to be of undoubted value. The particular type of cases in which there is afforded a justification or provisional indication for the use of the serum must be understood to be that class exhibiting well defined clinical evidence, of a secondary or streptococcic infection. This is substantiated by the presence of the streptococci in the sputum and may be suggested by such rational signs as chills, irregular elevations of temperature and sweats with other associated disturbances.

The utter failure of early efforts with the serum as generally reported found a plausible explantation in the recognition of the several varieties of streptococci and the very apparent lack of conformity between the particular type from which the serum was derived, and that present in the individual to whom it was applied. My previous experience with the serum having been uniformly unsatisfactory, it was with considerable hesitation and some scepticism that it was decided to begin the administration of the remedy in a few cases for whom, if to any, its use seemed to be especially appropriate.

At the last meeting of the American Medical Association in Saratoga, my attention was called to the occasional good results now possible to be obtained from the use of this agent, and in conversation with Dr. M. P. Ravenel, the information was conveyed to me that a serum derived from any of the distinct types of streptococci exerted such a predominant influence over all others, that for clinical purposes the difference in the several varieties was a matter of no practical importance. At the same time the failure attending its previous administration was attributed to the extremely light virulence of the micro-organism, and vital errors involved in its early preparation.

Any physician having considerable experience in the management of pulmonary tuberculosis, and constantly brought into intimate association with the disease, cannot fail to be impressed with the great prognostic significance of a pronounced streptococcic infection. There is ever impressed upon the medical attendant the appreciation of the disproportion frequently existing between the physical signs and the general condition of the patient. Many with pronounced physical manifestations of an extensive and active tuberculous infection without decided continued elevation of temperature are destined, under appropriate conditions of daily life and climate, to secure an ultimate and permanent arrest of the tuberculous process. Many others with defined physical evidences of both a lesser area of pulmonary involvement and a slighter degree of the activity of the tuberculous process but associated with frequent chilly sensations, decided elevation of temperature in the afternoon and night sweats, are foredoomed to grow progressively worse despite a perfected system of disciplinary control.

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* Read before the Denver and Arapahoe County Medical Society.

Having been compelled to witness the irresistible decline to a fatal issue of a large number of such cases, the resolution was made to begin the employment of the serum immediately upon my return to Denver, being convinced that while there was no definite assurance of success, at least there was nothing to lose and possibly something to gain from such a source.

After four months' experience with this agent, applied to the most desperate cases of consumption that can be imagined, I present a report in detail of results obtained, with the hope that perhaps therefrom something may be gleaned which, subject to further investigation and confirmation, may accrue to the material benefit of those afflicted with the dread ravages of the disease.

It should be noted that the serum was not employed in any case save as a last resort and only after other measures of regimen and climate had proven of no avail. In each instance the sputum was found to contain large numbers of streptococci before the serum was used. The sputum was deposited in a sterilized bottle early in the morning before food was taken and after the mouth and throat had been specially prepared.

That the serum has failed of actual results in a few of the cases here reported should be expected, as a matter of course. It justly may be construed a source of congratulation and surprise that it has not failed in all.

The report embodies a series of twenty-five cases of pulmonary tuberculosis selected from my private practice from the last of June to the last of October, 1902, and includes all the cases for whom the serum was used during this period.

The cases are reported in their chronological order, relative to the time of administration of the serum.

*Case I.*—Mrs. S., Murfreesboro, Tenn., twenty-four years old. Consulted me May 24, 1902, the day of arrival in Colorado. Family history good. Previous history good. First symptoms referable to present trouble developed in fall of 1901. Anemic onset, loss of flesh and strength with increasing pallor and dyspnea; frequent persistent cough. Weight, at best, 149 pounds, seven months ago. Present weight, less than 100 pounds. Had visited San Antonio, Tex., during the months of January and February with continued failure. Cough now excessive, especially at night. Expectoration for 24 hours, a large half cupful, purulent. Numerous bacilli. Great dyspnea on slight exertion. Chills daily for six or eight weeks. Night-sweats frequent. An afternoon temperature daily of from 101° F. to 102½° F. Pulse constantly over 120 in bed.

Examination of Chest.—Extensive tuberculous infection of left lung. Signs of consolidation with fine moist râles, after cough, to the fourth rib in front and in the back from the apex to the base. On the right side a slight general infiltration throughout with numerous fine clicks from the second interspace to the base in front, and from the middle of the interscapular space to the base in the back.

On account of the extensive pulmonary involvment, the great emaciation, the apparent sepsis which had been long continued, and a very nervous temperament, an absolutely unfavorable prognosis was rendered. It was apparent to the husband that the patient was too ill to undergo the exhaustion incident to a return home, and at his request suitable accommodations were secured, together with the services of a trained nurse, that her last days might be made as comfortable as possible.

On account of the desperate condition of the patient the serum was not used until June 26 and then with great reluctance. Despite the fact that for over a month she was kept constantly in bed in a large, well-ventilated, sunny room with four windows, easy of access to a porch, where she was frequently carried to recline upon a cot in the open air, and also despite the greatest possible degree of superalimentation, together with judicious cardiac stimulation, the patient had failed to respond in the slightest degree, save for a brief interval, to the influences of climatic change, mode of living or management. The temperature was constantly in the afternoon between 102°F. and 103°F., the pulse from 120 to 140, extremely weak, easily compressible and frequently almost impossible of detection.

The serum was used with great reluctance on June 26 and repeated the day following, and again two days later. Each injection was given in the evening. The afternoon following its first employment there was a very slight lowering of the temperature, but a change of one degree was not considered sufficiently distinctive to justify any conclusions as to the utility of the serum. A similar change was noted the day following the second injection. The temperature remained unchanged at the decline on the third day and the day after no further change being noted a final injection was administered. From this time until the present—April, 1903—there has been no hour of any day that the temperature has exceeded 99°F. For several days following the last injection, however, there was great prostration and approaching collapse to such an extent that the patient was expected to die hour by hour and was sustained only by heroic stimulation. The subsequent progress of the case has been one of uninterrupted and most remarkable improvement. With the persistence of a normal temperature at all hours of the day and the relief of the cardiac embarrassment and circulatory disturbance, there resulted increase of appetite, improvement of digestion, gain in strength and weight, a diminution of cough with expectoration and opportunity for longer hours of sleep. The patient has remained under the same environment until the present time. The gain in weight to date is 43 pounds. The pulse is constantly in the neighborhood of 80 or under, sleep is unbroken, there has been no cough for nearly six months and no expectoration.

Physical examination discloses slight changes in pitch and quality of respiratory sounds on each side incident to the proliferation of fibrous tissue throughout the infected areas. From the left apex to the second rib occasional very fine semidry clicks are scarcely audible at end of inspiration following a cough. A few similar sounds, entirely devoid of bubbling character, are heard at very base of right lung in an exceedingly small area one-half the size of palm of hand.

*Case II.*—Mr. T., Appleton, Wis.; aged twenty-eight years. Consulted me May 10, 1902. Had been in Denver two days. Present trouble of one year's duration. Bronchitic onset. Had spent the last seven months in New Mexico and Northern Texas without improvement. Average weight 150, present weight 120. Cough frequent, severe; expectoration copious, bacilli numerous. Temperature averaging 102°F. each afternoon, pulse 108. No night-sweats; chills every afternoon.

Examination.—Extensive active tuberculous infection of each lung. Moist râles right apex to the base, large cavity below the clavicle. Left front, moist râles to the third space. Dulness and bronchial breathing both upper fronts. In the back moist râles with a considerable degree of consolidation apex to base on each side.

On account of a daily elevation of temperature and a very rapid pulse the patient was kept reclining on a cot on the porch, undressed, until June 27, when the serum was used for the first time. The temperature had averaged 103° F. every afternoon, pulse 130 to 140, and there had been frequent chills and copious sweats. The case was regarded as absolutely hopeless and the serum was used almost purely as an experiment.

The serum was used on three successive days and the patient was kept under observation for a week or ten days later. No effect was noted as far as reduction of temperature was concerned or other amelioration of the symptoms. Considerable prostration resulted, however, and the pulse immediately became somewhat weaker and the patient was subsequently advised to return home.

*Case III.*—Mr. B., Nashville, Tenn.; aged thirty-six years. Consulted me February 3, two days after arrival in Colorado. Present illness developed three months before. Acute onset, severe hemorrhage shortly after leaving his destination en route for Colorado. Several recurrences on the train and one the day following arrival. Night-sweats frequently, chills occasionally, fever daily, cough moderate, expectoration about four ounces in twenty-four hours.

Examination.—Consolidation with moist râles after cough, right apex to fifth rib and to lower third of interscapular space. Fine clicks after cough left supraclavicular fossa.

Patient was put to bed and absolute quiet enjoined until the hemorrhage had entirely ceased. This persisted, however, nearly 30 days, though not associated with very profound exhaustion. The temperature was constantly over 101°F. during this period. Subsequently there were no recurrences of hemorrhage and although quiet and an out-of-door existence was observed the patient grew gradually, though almost imperceptibly worse, temperature ranging from 101° F. to 103° F. each afternoon, associated with a very rapid pulse.

The serum was administered on June 27 and June 30 and was followed each time by an immediate, though temporary, drop in the temperature. This rose again on the third day following the second injection and necessitated the use of the serum for the third time on July 4. From July 4 until August 1 the temperature remained very nearly normal, although not associated with any visible improvement either in the physical signs or the general condition. It was used again on August 1, but although the temperature was kept at nearly normal for some time the patient made no apparent improvement and was finally sent home as a hopeless case.

*Case IV.*—Mr. H., Nashville, Tenn.; aged thirty-three years. Consulted me June 16, the day of arrival in Colorado. Sickness of four years duration. Frequent hemorrhages, very frequent and distressing cough; expectoration nearly ten ounces in twenty-four hours. Loss of 30 pounds in weight, temperature 103°F. and pulse 120 every afternoon.

Examination.—Extensive tuberculous infection of the right lung with large cavity in upper portion and moist râles nearly to base. Large cavity in left back. Consolidation of left upper front with small cavity below the clavicle.

The serum was used June 27 and the temperature dropped from one to two degrees, which reduction of temperature was maintained for over a week. On account of the extensive infection and poor financial condition the patient was advised to return home without further employment of the serum.

*Case V.*—Mr. B., Natick, Mass. Consulted me December 20, 1901, two days after arrival in Colorado. In hospital three weeks for typhoid fever one year before. Present illness developed Oct., 1901. Operations for rectal abscess September, October and November, 1901. Average weight 198, on arrival 177. Temperature every afternoon 100°F. to 100½°F.

Examination.—Signs of slight consolidation right apex with fine clicks after cough to second space and to a point just below the spine of the scapular. In the lower right back slight dulness and increased intensity of voice sounds without moisture.

The patient, owing to a readily assignable cause, experienced a series of frightful hemorrhages beginning February 19, 1902, which involved a four weeks' sickness and nearly cost him his life. He subsequently rallied but continued to exhibit a daily temperature of 101°F. or thereabouts each afternoon. In the late spring and early summer gradual loss of flesh and strength took place with an increase in the activity and area of the tuberculous process. The serum was administered June 27 and was followed by a drop in the temperature which persisted for nearly two weeks. At the end of this time the temperature arose again and on account of his general prostration the patient was advised to return home.

*Case VI.*—Mrs. H., Jacksonville, Fla.; aged twenty-nine years. Consulted me June 18, one day after arrival in Colorado. Mother died of tuberculosis. Present trouble had been of 18 months' duration. Acute onset following pleurisy. Average weight 127 pounds. Present weight 95 pounds. Cough excessive. Expectoration, 24 hours, large cupful, purulent. Bacilli numerous. Night sweats every night, chills daily. Temperature every afternoon for many weeks over 102 degrees. Marked dyspnea on slightest exertion. Appetite very poor. Bowels very loose, five or six free movements a day, without blood, shreds or mucus. Pulse 120 at rest in the afternoon.

Examination.—Extensive active tuberculous infection of the left lung with moist râles throughout, and open pneumothorax at base. On the right side slight consolidation with fine, moist râles from the apex to the third rib and to the middle of the interscapular space.

The patient was placed in bed in a large airy, sunny room, opening on to a private balcony, and remained absolutely quiet for two months before improvement took place. The serum was given on June 29 without any appreciable result being noted. This was not repeated on account of the objections of the patient. The temperature remained during the first month between 102°F. and 103°F. each afternoon and then gradually receded, and has not been above 99 since the latter part of August. There has been a marked gain in the general condition, weight being increased 36 pounds, cough very much diminished, expectoration about two tablespoonfuls in 24 hours. Appetite excellent, pulse 80 to 90 all hours of the day, no night sweats or chills during the past six months. The examination of the chest at the present time shows very fine clicks left lung apex to base with an open pneumothorax without liquid. Entire absence of signs in the right lung.

*Case VII.*—Mr. F., New York City, twenty years old. Consulted me January 6, two days after arrival in Colorado. Family history, four near relatives died of consumption. Present trouble of four months duration. Acute onset following severe cold. Occasional chills and night sweats from the first, becoming much more frequent of late. Weight, four months ago, 150 pounds; now 129 pounds. Cough moderate, expectoration 24 hours two ounces. Appetite very poor, dyspnea on exertion. Temperature 102° F. each afternoon. Pulse 120 to 130.

Examination.—Signs of consolidation well marked with moist râles left lung apex to base.

In spite of perfect quiet and a constant out-of-door existence with the maximum amount of food, the patient progressively went from bad to worse, the temperature, chills and sweats becoming more frequent, with increasing loss of weight and strength, more severe cough and greater expectoration, and the tuberculous infection gradually becoming more active and extensive.

The serum was given on July 4, all hope having been despaired of and its use being determined upon simply as a last resort before advising a return home. It was followed by a drop in temperature within twelve hours. This remained at nearly normal for over a week with entire absence of chills and sweats and increase of strength and appetite. During the three weeks following the temperature arose but slightly, although occasionally elevated to 100½°F., but never going within one or two degrees of its former limit. During this time a gain of eight pounds was made in weight, together with a material improvement in the general condition. On August 1, the temperature having shown a tendency to rise, a second injection was administered which was attended with the same results as before. From this time until October 1 the patient experienced scarcely any elevation of temperature and suffered no return of the chills or night sweats, but was unable to make any further gain in weight. The pulse continued rapid, cough and expectoration profuse, no signs of lessening of the activity of the tuberculous process and the patient was advised to return home.

*Case VIII.*—Mr. L., Spencer, Ind.; aged forty-six years. Been in Colorado three years. Consulted me July 7. Present trouble began 3½ years ago, following pleurisy. Spent nearly a year in Asheville before coming to Colorado. Was summoned to see the patient on account of very severe hemorrhage. The condition of the patient did not justify any physical examination for two weeks, when an extensive active tuberculous infection was recognized in each lung. Marked consolidation with moist râles after cough from the right apex to the base front and back, left to the third rib.

The hemorrhages were checked after a few days, but a high fever ensued together with rapid respirations and very feeble and extremely rapid pulse. Without attempting to make complete physical examination at this time a provisional diagnosis was made of septic pneumonia. The respirations were nearly 50, pulse 130 to 140 and the temperature 103°F. to 104°F.

The serum was administered on the morning of July 13, at the very height of the unfavorable symptoms. The temperature dropped to 100°F. that evening, and to normal during the night, and has never since gone over 98⅗° F. The patient has made a progressive and uninterrupted improvement with marked amelioration of all the symptoms including very great gain in weight. At the present time there is absence of cough and expectoration, and very marked diminution of the activity of the tuberculous process as shown by the physical signs.

*Case IX.*—Mr. O., aged twenty years. Consulted me July 24, three weeks after arrival in Colorado. Present trouble of seven months duration. Hemorrhagic onset. Several recurrences. Average previous weight 150 pounds, present weight 128½ pounds. Cough very considerable, expectoration, 24 hours, two ounces. Appetite poor, bowels very loose, dyspnea on very slight exertion, occasional night sweats and chills, fever every afternoon from 102° F. to 103° F. Pulse 108 to 120.

Examination.—Signs of consolidation with numerous medium-sized moist râles, right apex to base in front and back. Patient was kept under observation for five days in bed without any diminution of temperature or pulse being noticed.

The serum was administered on the evening of July 29. There followed no elevation of temperature above 99° F., no chills or night sweats until August 8. During this time he gained appreciably in strength, appetite improved, cough and expectoration diminished. On August 8, the temperature having risen during the day to over 100° F., the serum was administered again. Following this there was no further elevation of the temperature for several weeks. One month later, viz., September 1, he had gained nine pounds, was eating well, coughing but little and expectorating considerably less than on arrival. The temperature had been but slightly elevated at any time. On September 16, the temperature having been over 101° F. for a few days previous, the serum was administered again and was followed by a drop of one degree in the temperature. A few days later he left for Arizona to spend the winter. Physical examination made before departure showed much less moisture in the chest, although the limits of the affected area were not diminished.

*Case X.*—Mr. M., Chicago, Ill.; twenty-four years old. Consulted me July 18, one week after arrival in Colorado. Family history and previous history good. Present trouble of six months' duration, preceded by an attack of so-called typhoid fever from which he never fully recovered. Expectoration very slight less than one-half ounce in 24 hours. Cough also slight; no chills, no night sweats, marked dyspnea on exertion, appetite very poor, temperature over 101° F. each afternoon, pulse 120 at rest.

Examination.—Signs, consolidation each apex with fine clicks after cough on the right side from the apex to the fourth rib. On the left side from the apex to the very base. In the back fine clicks at the very apex on the left and on the right side from the apex to the lower third of the interscapular space.

After ten days' observation of the patient in bed the temperature was found to be over 102°F. each afternoon and frequently higher. There was a perceptible loss in general condition. The serum was administered July 30 and repeated August 1 with no result. A few days after inequality of the pupils was observed, followed by other unmistakable evidences of tuberculous meningitis from which the patient died after the lapse of five or six days.

*Case XI.*—Miss S., Lafayette, Ind.; aged twenty-five years. Consulted me December 23, 1901, four days after arrival in Colorado. Illness at that time of six months' duration. Of anemic onset. Marked emaciation, chills and fever daily. Cough and expectoration moderate. Absence of menstruation for six months. Marked dyspnea on exertion. Pulse 132 at 11 A.M. sitting. Temperature 101°F.

Examination.—Extensive active tuberculous infection of each upper lung. Signs of marked consolidation and moist râles nearly to fourth rib each side.

Under a more or less perfected system of management the patient made marked improvement in all respects. May, 1902, there was entire absence of moisture in both lungs save for a few fine clicks below the clavicle on the left side. General condition much better.

The patient continued to improve until a sudden hemorrhage in the middle of the summer left her with greatly impaired vitality and a daily temperature of 102° F. to 103° F. The serum was used August 6 and repeated in two days, since which time there has been no elevation of temperature. There has ensued a marked improvement in the general condition as evidenced by very slight cough and expectoration and gain of fifteen pounds in weight. Examination now shows no moisture in either lung.

*Case XII.*—Mr. W., Dayton, O.; aged twenty-five years. Consulted me June 26, day after arrival in Colorado. Present trouble of six months' duration. Bronchitic onset, several severe hemorrhages. Pulse at 11 A.M. 118; temperature 101° F. Dyspnea on exertion. Loss of 27 pounds in weight.

Examination.—Signs of consolidation with numerous moist râles over entire left chest apex to base front and back.

The patient was kept in a state of perfect quiet and rest out of doors, sleeping in a tent in the country and taking the maximum amount of food. At the end of six weeks he exhibited a gain of five pounds in weight without the slightest improvement in the physical signs, or in the cough or expectoration, or in the temperature record. As a matter of fact, the process meanwhile was found to have involved the other lung. The temperature being over 101° F. each afternoon. The serum was administered on August 6 and repeated the next day. The temperature subsided to normal immediately and remained so for several weeks, but was attended subsequently with material improvement in the general condition. A very copious hemorrhage which took place in September was not associated, nor followed by any rise of temperature. The patient remained remarkably well until the early part of October, when the fever rose suddenly, following a chill, and remained elevated over 102° F. for five days. The serum was administered on the evening of the fifth day, the temperature then being 104° F. The next day the temperature did not go above normal nor has it done so since, and he has gained since the time that it was administered nearly five pounds. His cough and expectoration are much diminished. No signs of disease are recognized in the right lung.

*Case XIII.*—Mrs. T., aged twenty years. Consulted me June 25, two weeks after arrival in Colorado from California, furnishing the history of having suffered from several severe attacks of pneumonia. Had been coughing for two weeks from a severe cold contracted on the train; temperature elevated less than one degree in the afternoon, cough severe and frequent, slight pain in the left side.

Examination disclosed the presence of numerous loud moist râles in the left side and back from the middle third of the interscapular space to the base. Throughout this region there was a slight change in the pitch and quality of the respiratory sounds with prolongation of expiration indicating slight consolidation.

The patient had lost 25 pounds in weight during the past six months, was anemic and complained of feeling tired constantly. The examination of the sputum failed to show the presence of any tubercle bacilli. Under appropriate supporting treatment and proper medication the patient failed to exhibit the slightest improvement whatever. On the evening of July 6 during my absence from town, a sharp rigor was experienced, followed by an immediate rise of temperature and severe pain in the left lung, especially on inspiration. A physician being summoned pronounced it a case of pneumonia and administered veratrum viride. Upon my return early the morning of August 7, I found well-defined consolidation of the lower lobe of the left lung with innumerable fine clicks at the end of inspiration. Temperature 102° F., pulse 120, bounding. The serum was administered and the veratrum viride discontinued. The bowels were freely moved, salicylates given for one day and from the morning of August 8 there never has been any elevation of temperature whatever. The cough almost immediately became looser though without much expectoration. Within 48 hours the consolidation was less marked and moist râles less numerous. The patient was kept in bed for two weeks, at the end of which time the moisture had entirely disappeared from the chest, together with all evidences of consolidation. The patient has since led an out of door life and gained 30 pounds without any return of cough or recognition of physical signs.

*Case XIV.*—Mr. H., Boston, Mass.; aged forty-one years. Consulted me June 16, one day after arrival in Colorado. Typhoid six years ago, with relapse three months later. Has never been well since. Temperament excessively nervous, and on account of this, with loss of weight, without pulmonary infection being recognized, was sent to the Adirondacks in 1895 and various other health resorts. Pulmonary tuberculosis was recognized the summer of 1901. Cough severe, loss of weight marked, had night-sweats for six or eight months, weight 133 as compared with previous weight a few years ago of 170. Cough very excessive, disturbing sleep greatly. Expectoration 24 hours four ounces, raised with difficulty. Cough paroxysmal. Appetite very poor, digestion bad. Marked dyspnea on slight exertion. Fever every afternoon. Pulse from 110 to 120, temperature from 100½° F. to 102° F.

Examination.—Extensive involvement of the left lung. Signs of consolidation with fine moist râles apex to base front and back. On the right side less consolidation with fine clicks after cough apex to the third rib.

Urine contained a large amount of sugar. Specific gravity 1.040. Quantity in 24 hours averaging between four and five quarts.

The services of a trained nurse were at once secured and the patient sent into the country, where he lived an out of door existence for several weeks, receiving rigid attention as to the regulation of diet. A moderate improvement was noted in the urine, together with slight gain in weight and increase of strength, the temperature, however, remaining in the neighborhood of 100° F. to 101° F. each afternoon, although sometimes higher. In the latter part of July and early in August the cough became much more severe, occurring in very frequent and distinct paroxysms, expectoration copious, temperature more elevated together with the pulse, and the nervous condition increasing in spite of the absolute quiet and rest enjoined and of the opium treatment which had long been instituted for the diabetes.

The serum was administered August 8 and was followed within 24 hours by a drop in temperature to normal. The temperature has not since risen and the cough has become immeasurably improved. The physical signs show a material lessening of the activity of the tubercular process. There is no longer physical evidence of disease in the right lung and there is materially less moisture in the left, the râles being recognized only from the third rib to the base on the left side.

*Case XV.*—Miss D., Uniontown, Pa.; aged thirty-two years. Consulted me July 30, two weeks after arrival in Colorado. Present trouble of five months' duration, following pneumonia. Much emaciation. Expectoration 24 hours two drams. Cough paroxysmal. Dyspnea on slight exertion. Temperature averaging 102° F. in the afternoon.

Examination.—Extensive involvement left chest with fine moist râles apex to base front and back. Signs of consolidation throughout. On the right side slight consolidation with moist râles apex to second rib and to lower angle of the scapular in the back.

The patient was kept at rest in bed with open doors and windows until August 8 without there being recognized any appreciable drop in temperature, at which time the serum was given and was followed by a considerable remission of temperature lasting for several weeks and associated with a gain in general condition. Subsequently the patient became exceedingly despondent on account of financial and domestic disturbances and was finally advised to return home.

*Case XVI.*—Miss C., Albany, N. Y.; aged twenty-four years. Consulted me Nov. 6, 1901, ten months after arrival in Colorado. Present trouble then of two years' duration. Had failed progressively from the beginning. Temperature usually two or three degrees above normal in the afternoon.

Examination.—Extensive tuberculous infection of each lung. Consolidation with moist râles left apex to base, right from apex to third rib.

Under a strict system of discipline and supervision a gradual improvement took place until June, 1902. A gain of 14 pounds being registered together with a lessening of the activity of the tubercular process as shown by a diminution of the moisture. In June, 1902, a severe cold was taken during menstruation, resulting in pelvic peritonitis and abscess, a large mass forming in the right lower abdomen. The patient being in the mountains at the time, was removed to Denver and admitted to St. Luke's Hospital and laparotomy performed, and a large amount of fetid pus evacuated, provision being made subsequently for vaginal drainage. The patient rallied slowly from the shock of the operation and for a few weeks following maintained a constant temperature of from 102° F. to 104° F. The serum was used twice without effect and the patient died about four weeks following the operation.

*Case XVII.*—Mr. R., Cleveland, O.; aged thirty-one years. Consulted me August 30, one week after arrival in Colorado. Present illness of seven months' duration. Acute onset supposed to follow typhoid. Frequent night-sweats, cough very severe, disturbing sleep, marked dyspnea on exertion, temperature from 103° F. to 104½° F. every afternoon; pulse 120 to 140; emaciation great.

Examination.—Signs of consolidation each apex with moist râles apex to base on the right side. Moderate cavity below the right clavicle. Moist râles from the apex to the lower angle of the scapular behind. Left side fine clicks after cough, apex to base and in the middle of the interscapular space.

Suitable accommodations were obtained for the patient and the services of a trained nurse secured. The temperature showed no tendency to drop for a period of two weeks and on September 16 the serum was given. Since this time the temperature has maintained an average daily of two degrees lower than for the time previous to the administration of the serum, and the pulse has maintained an average of 100. There being no change for the better in the general condition and a tuberculous laryngitis becoming more extensive with beginning ulceration of the free border of the epiglottis interfering with the deglutition, the patient was advised to return home.

*Case XVIII.*—Miss K., Joliet, Ill.; aged twenty-one years. Consulted me August 20, one year after arrival in Colorado. Present trouble has been of two years' duration, following an acute pleurisy. Average previous weight, 135 pounds, on arrival one year before 110. Weight, at the time of the examination, 114½ pounds. Chills daily for many weeks; temperature every afternoon for six or eight weeks 102° F. to 103° F. in the afternoon. Cough considerable, expectoration 24 hours one-quarter cupful. Dyspnea on slight exertion.

Examination.—Consolidation with fine moist râles right apex to second space, back to spine of the scapular. Left more extensive consolidation with moderate sized moist râles to the base front and back. Small cavity in the upper right back.

The patient was placed in the best possible surroundings in bed in a large, airy room, opening onto a porch and attended by a skilled nurse. During a period of three weeks a high degree of superalimentation was afforded with absolute rest at all hours of the day either in bed or on the porch. No material improvement was noted in any respect. One week later, the patient being palpably weaker, the temperature higher with an increase of cough and with daily chills it was decided to administer the serum. This was given September 17. At this time in view of the physical condition, nervous temperament, the progressive loss of weight and the length of residence in Colorado under the most favorable conditions, the case had been given up as absolutely hopeless. A few days after the serum was given the temperature became materially lower and the patient began to gain in general condition. She remained in Colorado for several weeks constantly, showing marked improvement. It then became necessary, in view of family considerations, to permit her to return to Illinois. Her weight was then 120, temperature normal, cough and expectoration diminished. She returned to Colorado in November weighing 125 pounds, an increase of 10½ pounds, and has since gained twenty pounds more. She has had a normal temperature during her absence and since her return, with greatly diminished cough and expectoration.

The examination of the chest at this time shows much less moisture in the chest and very apparent evidences of a degree of arrest being secured in the tuberculous process.

*Case XIX.*—Miss M., Albany, N. Y.; aged twenty-nine years. Consulted me April 26, five weeks after arrival in Colorado. Present trouble of five years' duration. Began with cough and pleurisy. Loss of weight on arrival ten pounds from the average. Appetite and digestion fair, no fever, pulse 108 in forenoon, sitting.

Examination.—Extensive infection of each lung. Signs of consolidation with fine clicks after cough left apex to fifth rib, and to the lower third of the interscapular space. Right no evidence of consolidation, but fine clicks to the third space and to the spine of the scapular.

The patient exhibited a satisfactory gain in all respects until September 30, when a sudden and severe hemorrhage took place. On the second day following the hemorrhage the temperature rose to 103⅗° F. together with a pulse of 124 and respiration of 30. The serum was administered at this time and repeated on the morning of October 3, and again on the evening of the same day; the temperature in the meantime showing a progressive tendency to decline. The temperature was normal through October 4 and 5, until the latter part of October 5, when it rose steadily to 103° F., attended with great prostration and extremely rapid and feeble pulse. Death occurred the night of October 5.

*Case XX.*—Mrs. S., aged forty-three years. In Colorado 12 years. Consulted me August 2, 1902. Present trouble began 18 years ago. Anemic onset. Case of distinctly fibroid type of tuberculosis. Chills and hemorrhages occasionally; fever every afternoon from 101° F. to 103° F., cough very severe, expectoration, eight ounces in 24 hours.

Examination.—Signs of marked consolidation, each lung with coarse moist râles right apex to base, left apex to fourth rib. Large cavity below the left clavicle.

After forced feeding, absolute rest in bed and with the constant attention of a nurse, the patient manifested a temporary amelioration of the symptoms and gain in weight. This was continued without any material interruption until the latter part of September, when a chill occurred with a sharp rise of temperature, an increase of cough, pain in chest and exacerbation of all the symptoms. This continued for four or five days and was accompanied with great prostration.

The serum was used on October 3. An immediate drop of temperature took place, which decline was maintained until the evening of October 9, when, with a returning elevation, the serum was again used, to be followed in turn by another remission. The temperature rose again on the evening of October 11 and the serum was once more given. The temperature continued at about normal for over a week, the patient remaining, however, very much prostrated and evincing symptoms of approaching dissolution. The patient died October 23.

*Case XXI.*—Miss B., Newburg, N. Y.; aged twenty-six years. Consulted me September 10, three months after arrival in Colorado. Had lost three members of immediate family with consumption. Present trouble of two years' duration, several hemorrhages. Average weight 117 pounds, on arrival 85 pounds. Had previously failed to secure improvement from one year's residence in the Adirondacks and six months' stay at the Loomis Sanitarium and a two months' residence at Tucson. Had remained three months at Colorado Springs without improvement. Cough very excessive; expectoration, four ounces in twenty-four hours. High fever every afternoon; marked dyspnea on slight exertion.

Examination.—Extensive active tuberculous infection of each lung. Signs of consolidation right apex with fine moist râles to the base. On the left side large coarse moist râles to the base front and back.

The patient in spite of ideal accommodations, careful attention to mode of life and the services of a skilled nurse, having shown no improvement the serum was given on October 5 and attended by no good results. The pulse on the contrary, became perceptibly weaker and more rapid for four or five days following to such an extent that death was feared. Upon her rallying sufficiently to undertake the journey she was immediately sent home.

*Case XXII.*—Mr. T., age 22 years. Peterboro, Ont., Canada. Consulted me September 29, ten days after arrival in Colorado. Present trouble began three months earlier with bronchitic origin, loss of flesh and strength. Slight hemorrhage in August, with several recurrences. Average weight 182 pounds, on arrival 155 pounds. Night-sweats frequent, cough considerable, disturbing sleep. Expectoration 24 hours one-half cupful. Dyspnea upon exertion; temperature 104° F. at 5 P.M.; pulse 144, sitting.

Examination.—Signs of consolidation with fine moist râles after cough right apex to base front and back. Left to second rib and to spine of scapular.

The patient was provided with a tent and afforded the attention of a nurse for a period of two weeks until October 8, during which time he lost four pounds, without there being any apparent improvement in general condition or physical signs.

On October 8 the serum was administered and repeated every second day for four days, following which the temperature subsided to normal and has remained very nearly that ever since. In the ensuing three weeks he gained eight pounds in weight, which gain has since been maintained. He has very much less cough and expectoration, an excellent appetite and is increasing in strength. The examination of the chest discloses only an occasional very fine click after cough above the clavicle on the left side, and the moisture considerably less free on the right side.

*Case XXIII.*—Mrs. J., age thirty years. Chicago, Ill. Consulted me October 17, the morning of arrival in Colorado. Present trouble of one year's duration. Bronchitic onset, progressive loss of flesh and strength, with increase of cough and expectoration. Weight, on arrival, 100 pounds, as compared with an average weight of 125 pounds. Night-sweats daily; hemorrhage two days before arrival; having been placed upon the cars a few hours after the hemorrhage took place. Temperature at 11 A.M., 104° F.; pulse 132. Had not menstruated for three months.

Examination.—Extensive tuberculous infection of the left lung, consolidation at apex with fine clicks to the base front and back, considerable cavity formation in upper front. Right less consolidation with fine clicks to the fourth rib and middle of the scapular.

The serum was administered that night and again the day following. The temperature subsided immediately after the second dose. Several days after the patient became very ill. There was an extremely rapid pulse attended with a severe urticaria and pains in nearly all the joints. This lasted several days, since which time the temperature has remained almost normal until the present time. She has gained four pounds in weight, is coughing and expectorating very much less and has an enormous appetite.

*Case XXIV*.—Mr. S., age thirty-three years, Birmingham, Ala. Consulted me September 2, one week after arrival in Colorado. Present trouble of two years' duration. Began with hemorrhage, frequent, almost daily, chills for past year, with night sweats. Average weight, 181 pounds; on arrival, 120 pounds. Cough moderate, disturbing sleep, expectoration 24 hours, about four ounces, appetite and digestion poor. Temperature from 102° F. to 103° F. every afternoon; pulse 124 to 130.

Examination.—Signs of consolidation each apex with fine moist râles right apex to base front and back, left fine clicks to the base in front, no moisture in back.

The patient was provided with a tent in a suitable location and received the attention of a nurse. He was kept in bed whenever the temperature was above normal, but was allowed to remain on the porch in a steamer chair during the forenoon. From September 2 to October 18 there was at no time the suggestion of an improvement as far as the temperature and pulse were concerned, and the serum was therefore administered on October 18 and repeated October 20. From that time until the present, there has been no elevation of the temperature over 99° F. at any hour of the day. He has made a marked improvement in strength and weight, the total gain since arrival being 14 pounds. There is a perceptible gain in the physical condition. Less moisture in the right lung and almost none in the left.

*Case XXV*.—Miss B., age eighteen years. Indianapolis, Ind. Consulted me September 30, 1901, one week after arrival in Colorado. One sister and father died of tuberculosis. Present trouble of eight months' duration, bronchitic origin. Weight, at best, 126 pounds in winter of 1900; on arrival, 124 pounds. Cough moderate; expectoration, one ounce in 24 hours; pulse, 120 in the afternoon sitting, temperature 101° F.

Examination.—Slight consolidation and fine moist râles after cough left apex to third rib.

Under an appropriate system of daily life the patient exhibited a pronounced gain in all respects. Physical evidence of the infection disappearing entirely and a gain of 25 pounds being noted in the winter and spring of 1901 and 1902. A severe attack of the grip occurred late in the spring of the past year, confining the patient to bed for a number of weeks, and was followed by an increase of cough, which persisted, together with marked loss of weight and strength. The weight was reduced to 122 pounds, less than on arrival. A temperature was maintained constantly above normal and expectoration became profuse. A residence in the mountains of Colorado during the summer and the constant employment of a systematic regime sufficed to produce a partial arrest of the activity of the tuberculous process. The cough and expectoration improved; the weight increased to 132 pounds and the temperature was restored to normal at all hours of the day. The improvement continued until October 20, when a rigor occurred, followed by a sharp rise of temperature, pain in the left chest and back, together with a readily recognized extension of the tuberculous process into the axilla of the affected side. The serum was administered on October 21, since which time the temperature has remained very close to normal.

Examination, made recently, shows no evidence of moisture within the chest. Moderate consolidation left front, but no adventitious sounds recognized.

A thoughtful review of these reports suggests the following two conclusions with reference to this series of cases: (1) The serum in every instance, save one, was used in apparently hopeless cases of pulmonary tuberculosis, or at best, in those presenting most unfavorable prognostic indications; (2) that such important factors as a favorable climate and a due supervisory control, without serum, were insufficient in these cases to secure arrest, but with the addition of the serum, as an adjuvant, did effect varying degrees of improvement.

A brief résumé of results indicates that out of a total of 25 cases, Case I presents such remarkable improvement as to insure practically a complete and permanent recovery. Case XIII secured speedy termination of a streptococcic pneumonia, and Case VIII recovered promptly from a severe septic pneumonia following hemorrhage in consumption, and now bids fair to secure an arrest of the original infection.

Three cases may be put in Class A, as representing the best possible results.

Class B includes four cases: XI, XII, XXI, and XXIV, showing very marked improvement directly attributable to the serum and of sufficient extent to turn the prognostic balance in favor of ultimate arrest.

Class C is composed of five cases: IX, XIV, XVIII, XXII and XXIII, all of whom exhibit definite improvement, although the final prognosis is as yet uncertain.

Class D comprises eight cases: III, IV, V, VII, XV, XVII, XX and XXI, all showing a degree of improvement, but not such as to materially modify a previous unfavorable prognosis.

Class E comprises three cases: VI and XIX, in which the effect of the serum, if any, remains in doubt.

Class F comprises three cases: II, X and XVI, in which no actual result was exhibited, the serum being, in the light of subsequent developments, inapplicable to at least two of these.

It is well to add that in a large number of cases a urticaria developed in from three to ten days following the injection. In several cases severe pains in the joints with stiffness were experienced.

Without commenting further upon these results, it is perhaps sufficient to state that if the fact has been established that the serum, even in a single case from the entire list, has been instrumental in conjunction with appropriate measures of management in restoring the patient to health, its utility and beneficence are amply demonstrated, and a justification offered for this report.

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## THE ORIGIN OF THE EOSINOPHILES AND THEIR DIAGNOSTIC AND PROGNOSTIC IMPORTANCE.*

BY THOMAS R. BROWN, M.D.,
BALTIMORE, MD.

Among the factors which are tending to make medicine an exact science and to redeem it from the empiricism which has been its chief characteristic up to a comparatively recent time, nothing has played such an important part as the growth of the laboratory method of study and the application of the findings obtained therein to the intricate problems associated with the pathology and etiology of disease, the method of arriving at a correct diagnosis and prognosis and the proper treatment to be employed. Within recent years the clinical laboratory has come rapidly to the fore, and among the results obtained therein we feel that none have been fraught with more importance than those derived from the study of the blood in health and disease.

As is well known, the blood has several constituents, red-blood cells, white-blood cells or leucocytes, blood plates, blood dust, as well as the plasma or fluid portion, but in this communication we shall only discuss the second of these constituents—the leucocytes, and especially that variety of leucocytes which, from the reaction of its granules is known as the eosinophile or acidophile leucocyte, taking up its mode of origin and the significance of an increase or decrease of these cells, and carefully considering the value of these cells in diagnosis and prognosis.

That the eosinophile is an important cell in the animal economy seems highly probable from the fact that it has been found in the blood of practically all mammals, as shown by the careful studies of Schwartze, Metschnikoff, Sherrington and others, and this wide distribution, associated with the striking biochemical character of the cell, have made it a favorite object of study among hematologists. Of course, besides the general eosinophilia, that is, where there is an eosinophilic increase in the blood, there is a local eosinophilia, which is extremely interesting and the study of which will undoubtedly prove of great value in determining the mode of origin of these cells. Among the places where eosinophiles are to be found in greater or less amount may be mentioned the intestinal mucosa, especially when irritated by certain intestinal parasites and chemical irritants the skin, especially in certain cutaneous diseases, various tumors, especially those of a malignant nature, various exudates and excretions, especially those due to the gonococcus, nasal polyps, the secretion in bronchial asthma and the bone-marrow, which last habitat is of special interest in connection with the enormous eosinophilic increase met with in splenomyelogenous leucemia, and with the question of the seat and mode of origin of the eosinophiles.

In this paper we will discuss in order the proportion of the eosinophiles normally met with, the theories held regarding the origin of these cells and their function, and then discuss at some length the diseases in which an increase of these cells is met with, the significance of such an increase, and whether it is of service in diagnosis or prognosis.

As to the proportion of the eosinophiles normally met with, various observers have given slightly different figures, thus, Ehrlich gives 2 to 4 per cent., Hayem 7 per cent., Gabritschewsky 1 to 3 per cent., Müller and Rieder 1 to 4 per cent., Canon 1 to 3 per cent., von Limbeck 2 to 8 per cent., Uskov 6 per cent., Zappert .67 to 11 per cent. and Weichselbaum 5 per cent. From our own studies of 100 or more normal adults we have concluded that the average number of leucocytes per c.mm. is 6,500, of which 74 per cent. should be polymorphonuclear neutrophiles, 18 to 20 per cent. small and 5 to 7 per cent. large mononuclears and transitionals, and 1 to 2 per cent. eosinophiles. Zappert regards 50 to 100 eosinophiles per c.mm. as low normal, 100 to 200 as intermediate, 200 to 300 as high normal, and over 300 as pathological. According to the work of a number of investigators the percentage of the eosinophiles is independent of the age of the individual and also independent of the digestion.

The question of the seat and mode of origin of the eosinophiles is obviously of great importance in determining the significance of their increase or decrease, and yet it is a question which is far from being solved at the present time. Thus, Ehrlich believes that these cells are derived from preexisting eosinophiles often of the mononuclear variety in the bone-marrow. Uskov, Gulland and Pfeiffer, on the other hand, believe in the non-specificity of the cell granules, that is, that all are derived from a common form, the cell appearing in each case depending on the locality and condition. Müller and Rieder think that they are derived from the polymorphonuclear eosinophiles in the circulating blood, while various theories are held regarding a local origin of these cells, among which may be mentioned Kanthack and Hardy's theory that they are derived from fixed connective tissue cells in the intestines and serous cavities, Howard's belief in their origin from plasma cells, various views regarding their origin from the eosinophiles normally met with in the tissues, Kischensky's view that in bronchial asthma they are formed from the neutrophiles in the mucosa, and the theory advanced by us six years ago that in trichinosis the eosinophilic increase may possibly be due to a conversion of the neutrophiles into the eosinophiles in those portions of the muscle into which the trichinæ have wandered and set up their pathological changes.

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We cannot help feeling that while Ehrlich's theory—an origin from preexisting eosinophile bone-marrow cells—probably best explains the increase of these cells in most cases, a local origin of these cells from neutrophiles is probable in certain cases, notably bronchial asthma and trichinosis.

As to the exact nature of the eosinophile granules many widely divergent views have been held, some founded entirely upon staining reactions, others built on a more physical basis, all more or less hypothetical, some very far-fetched and bizarre. Up to the time of the introduction of the Ehrlich stain, these coarse, highly refractive granules were regarded as fat droplets from their original discovery in 1846 by Wharton Jones. The work of Ehrlich demonstrated that these granules are not fat, but are bodies possessing a marked affinity for the acid coloring matters, and by him and his school they are regarded as a sort of nutritive reserve, built up by the cell for its own use or for excretion, and thus, according to Schwarze, somewhat resembling the aleuron granules or crystalloids of plants. Zappert and Przewoski insist that these granules are of the nature of proteid, and Pouchet and Bannwarth have regarded them as related to or identical with hemoglobin. Sherrington, on the other hand, regards them as a form of nucleo-albumin, while Kanthack and Hardy believe them to be secretory products containing a zymogen, giving rise to alexines or other substances of great activity in phagocytosis and in conditions of inflammation and intoxication, and Noesske, from a study of the eosinophile cells in their relation to the infectious surgical diseases and tumors, concludes that the eosinophiles play the rôle of protectors against the invasion of bacteria. In all the above views the granules are regarded as paraplastic in nature, but Gulland holds that they are plasmatic, in other words, that they represent an altered condition of the microsomes, and are connected by a mitoma.

Now let us discuss as briefly as possible the various diseases in which eosinophilia is found and consider the value of this increase in diagnosis and prognosis.

In leucemia the enormous increase of these cells in the splenomyelogenous form helps to differentiate it from the lymphatic leucemia in which the eosinophiles are practically absent, and the presence of the eosinophilic myelocytes is of importance in showing the part the bone-marrow plays in the origin of the eosinophiles.

In bronchial asthma the increase of the eosinophiles in the blood is quite marked, sometimes reaching more than 30 per cent., and this in association with the appearance of large numbers of the eosinophiles and Charcot-Leyden crystals in the sputum serves to differentiate this form of asthma from the cardiac or renal asthma.

In connection with the association which is frequently noted between the eosinophiles and the Charcot-Leyden crystals it seems worth while for us to call attention to the work which we have done regarding the origin of these crystals. From a large series of carefully performed experiments in which the eosinophiles were exposed to various influences we have been able to definitely show that the Charcot-Leyden crystals are not direct crystallization products of the eosinophiles, and in this conclusion Müller of Vienna coincides as a result of his experiments on pemphigus.

There are no series of diseases in which eosinophilia is more interesting or more important than those due to various intestinal parasites, especially the *Trichina spiralis* and the *Uncinaria,* or *Anchylostoma duodenale.* In 1897 we reported a case of trichinosis in which a careful study of the blood showed a marked eosinophilia associated with a high grade of leucocytosis and the result of the study of this case and of two cases studied by us the next year led us to the following conclusions: (1) There is a marked increase in the percentage of the eosinophiles in the blood in trichinosis associated with a considerable leucocytosis, and this increase may be used as a diagnostic sign in this disease. (2) This disease in its sporadic form is more common than has hitherto been supposed, so that a systematic blood examination should be undertaken in all cases with indefinite intestinal, muscular or febrile symptoms in the hope that in some, at least, of the hitherto undiagnosed cases, the diagnosis may be reached.

We reported an additional case in 1899, and of these four cases the last three were diagnosed entirely by blood examination, as two of them had been previously diagnosed as typhoid fever and one as estivo-autumnal malaria. In all four cases the diagnosis was substantiated by an excision of a small piece of muscle and the demonstration of living active trichinæ therein. In the first case the eosinophiles reached 68.2 per cent. and the leucocytes 35,700; in the second case 42.8 per cent. and 13,000; in the third case 49 per cent. and 17,000, and in the fourth case 48 per cent. and 18,100. From our careful study of the blood and muscle in these cases we hold that it is highly probable that in this condition, at least, the eosinophiles are derived from the neutrophiles, transition taking place in the affected portions of muscle. Our arguments are based on the reciprocal relationship existing between the neutrophiles and eosinophiles, the presence of forms which we regarded as transitional cells between neutrophiles and eosinophiles in the affected muscle, and the fact that there was a larger proportion of the eosinophiles in the veins than in the arteries of the tissues adjacent to the affected portion of muscle.

That our conclusions regarding the diagnostic value of eosinophilia in trichinosis have been justified has been, we feel, definitely proven by the increasing number of cases of trichinosis diagnosed by the blood findings, for in practically no other condition is such a high percentage of the eosinophiles associated with such a marked increase of leucocytes met with. Atkinson, Blumer and Newman, Stump, Kerr, Gordinier, Cabot and others have reported in all between 20 and 30 cases of this disease so diagnosed, and this corroborative evidence seems to show that the blood picture may be regarded as a definite diagnostic sign in this disease.

In anchylostomiasis or uncinariasis we have again a high grade of eosinophilia but almost always associated with little or no leucocytosis and always associated with a progressive anemia, often reaching a very high grade and presenting many of the clinical signs of pernicious anemia. Zappert, Leichtenstern and others have reported marked eosinophilia in this condition. The fact that a number of cases of anchylostomiasis has already been introduced into this country from our insular possessions and the recent demonstration by Stiles (of the Bureau of Animal Industry) that the disease is met with to a considerable extent in Georgia and other of the Southeastern States should make us regularly examine the blood in all cases of progressive anemia, and if eosinophilia is also present the stools should be most carefully examined in the hope of finding there the ova or the embryos of the anchylostoma.

In the case of a number of other intestinal parasites, an eosinophilia has been occasionally met with, as in the case of the *Oxyuris, Ascaris, Tænia* and *Bothriocephalus,* and it has also been reported in the case of *Echinococcus* and *Bilharzia,* while recently Calvert has demonstrated a moderate leucocytosis with an increase of the eosinophiles, reaching 22 per cent. in one case, in filariasis. Gulland and Coles have met with this same condition and the former found that both the leucocytes and the proportion of eosinophiles increased during the night when the embryos appeared in the circulating blood.

Among the acute and chronic infectious diseases in which the eosinophiles may aid us in reaching the diagnosis or giving the prognosis may be mentioned scarlet fever, tuberculosis, typhoid fever, malaria, syphilis, gonorrhea, smallpox, and occasionally a few other of the infectious diseases.

In scarlet fever Kotschetkoff was the first to call attention to the fact that during the first and second weeks of the disease, in favorable cases, there was a distinct increase of the eosinophiles, sometimes reaching 15 per cent., while in the fatal cases this increase was not met with; these observations have been substantiated by Zappert, ourselves and others. In the three cases which we studied of this disease the eosinophiles varied between 6 and 12 per cent. during the second week. All of these cases terminated favorably.

In tuberculosis a number of observers, notably Teichmüller, have insisted that an increase of the eosinophiles in the blood and in the sputum is a favorable prognostic sign.

In typhoid fever all observers, notably Naegeli, describe an early disappearance of the eosinophiles, and the work of this observer seems to show that the early reappearance of these cells is a distinctly favorable prognostic sign, while in chronic malaria moderate eosinophilia is often met with, and may be a real help in diagnosing this condition.

In syphilis and in gonorrhea some observers have noted a slight eosinophilia, while in the urethral secretions in the latter disease large numbers of the eosinophiles are usually met with.

In smallpox Weil finds some eosinophilic myelocytes, while a slight eosinophilia has been described in leprosy, mumps, tonsillitis, and beriberi.

In a number of mental and nervous diseases a slight eosinophilia has been described by Zappert, Neusser, Capps and others. Recently from 12 observations on cases of chorea of varying degrees of severity, we have concluded that there is regularly a slight eosinophilia varying between 5 and 9 per cent. in this disease.

In diseases of the skin an eosinophilia both local and general has often been described. Thus, it has been met with in many cases of pemphigus and chronic eczema, scleroderma, psoriasis, pellagra, lupus, urticaria, dermatitis herpetiformis, xeroderma pigmentosum, Hallopeau's dermatitis, epidermolysis bullosa hereditaria, herpes zoster, Duhring's disease and various skin affections produced by different vesicants, notably picric acid. The eosinophilia met with in the skin-diseases is of especial interest, because of the fact that Ehrlich believes that the substances produced by the disintegration of epithelial cells have a marked chemotactic effect upon the eosinophiles. We have demonstrated an eosinophilia in chronic eczema, pemphigus and epidermolysis bullosa.

An eosinophilia has been noted after the use of various drugs and poisons. Zappert, Ehrlich, Lazarus and Grawitz report a high grade of the eosinophilia after the use of tuberculin, and we have recently demonstrated a leucocytosis of 30,000 with an eosinophilia of 12 per cent. after the protracted use of acetanilid.

Among the large number of diseases in which a moderate eosinophilia has been noted we would mention two cases of Addison's disease studied by us and many cases of gout.

Thus a consideration of the experimental work which has been done in connection with the etiology of the eosinophiles and the clinical results obtained from the study of these cells justifies us, we believe, in reaching the following conclusions regarding the significance of these cells.

But before giving these conclusions let us briefly recapitulate the conditions in which an increase in these cells is noted:

1. Splenomyelogenous leucemia where besides

a marked increase in the ordinary or polymorphonuclear eosinophiles we find large numbers of mononuclear eosinophiles, the so-called eosinophilic myelocytes.

2. In bronchial asthma associated with the presence of enormous numbers of eosinophilic cells, often mononuclear in character, and of Charcot-Leyden crystals in the bronchial secretions.

3. In pemphigus, where an increase is frequently met with, while in the vesicles, if fresh, many eosinophiles are to be found, although in old vesicles, or those produced in this disease experimentally by chemical irritants, very few eosinophiles are to be found, as shown by Neusser, Kriebich, ourselves and others.

4. In various acute and chronic skin diseases, as shown by numerous observers as mentioned above, and here the extent of the eosinophilia seems to depend largely upon the extent of skin surface involved by the disease. These cases certainly favor Ehrlich's views that substances produced by the destruction and disintegration of the epithelial cells of the skin have a peculiar attraction for the eosinophiles.

5. In various diseases due to intestinal parasites, the most important being anchylostomiasis, where we have a marked anemia and considerable relative eosinophilia, with no or slight leucocytosis, as a rule, and trichinosis, where the leucocytosis is very marked and the eosinophilia very intense.

6. The post-febrile eosinophilia following the marked diminution of the eosinophiles usually met with during the course of the fever, the notable exception to this being scarlet fever, where eosinophilia is the rule, especially in the second and third weeks of cases terminating favorably.

7. In malignant tumors, where the condition is met with, but is by no means common. It is more likely to occur in those cases where cachexia is present.

8. Compensating eosinophilia seen after extirpation of the spleen.

9. Drug eosinophilia, of which our case of acetanilid eosinophilia is a most interesting example, and in which category the eosinophilia following the administration of camphor and cantharides must be placed.

10. The moderate eosinophilia sometimes met with in many diseases, as gout, gonorrhea, syphilis, malaria, rheumatism, and, we think we may add chorea and probably others of the functional neuroses.

The conflicting views regarding the origin and significance of these cells, and the large number of cases in which an increase, although often of but slight amount, has been met with, leaves the question of the value of eosinophilia diagnostically and prognostically in some doubt, and yet we feel warranted in claiming that in certain cases it is of great aid both in diagnosis and prognosis.

Thus its presence seems to differentiate scarlet fever from measles and malaria from typhoid fever in doubtful cases, while we feel that the rapidly increasing number of cases of trichinosis diagnosed by the finding of a marked eosinophilia associated with a marked leucocytosis is in itself of great value in differentiating this disease from atypical cases of rheumatism or typhoid fever.

Gout may be differentiated from tuberculosis where the eosinophiles are usually much decreased, while bronchial asthma may be easily distinguished from cardiac or renal asthma by the large number of eosinophiles in the blood and sputum in the former condition. The discovery of anchylostomiasis in our Southern States makes it extremely important that new means of diagnosis should be introduced, and undoubtedly the eosinophilia with severe anemia, almost constantly met with in this disease, is of great aid in diagnosing this disease, at present but rarely met with, from pernicious anemia.

As regards prognosis, in a number of diseases the percentage of the eosinophiles furnishes us real aid, as in scarlet fever, where a high count during the second and third weeks seems to be a favorable sign; in typhoid fever, where an early reappearance of the eosinophiles (these cells disappearing in the stage of continued fever) points to a favorable prognosis; in the anemias, where the presence of a slight eosinophilia is a good sign; in tuberculosis, where the presence of eosinophile cells in the sputum is regarded by many as favorable prognostically, and in various surgical conditions, in which, again, the presence of these cells in a condition of moderate increase is a favorable sign.

Thus in considering the diagnostic and prognostic value of the increase or decrease of the eosinophiles, let us admit that the percentage or absolute number of these cells present is of real value in the diagnosis or prognosis of a number of diseases, such as trichinosis, anchylostomiasis, leucemia, scarlet fever, bronchial asthma, tuberculosis, typhoid fever, malaria and various diseases of the skin and of the nervous system; let us collect as many facts regarding the changes and characteristics of these cells in as many diseases and pathological conditions as possible, so that from this great mass of material we may be able to arrive at definite conclusions regarding the significance of the eosinophiles, their mode of origin and their life history, and from this be able to make much more rational deductions as to their value in diagnosis and prognosis.

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**Sublamin in Treatment of Syphilis.**—This preparation has been advanced to overcome the objections to the use of the bichloride of mercury in the injection treatment of syphilis. M. Friedlander (Deut. Aerzte Zeitschr., Feb. 15, 1903) has employed it in 15 cases presenting either hard chancres, secondary lesions, papular, tuberculous and ulcerating syphilides, or specific disease of the mouth, tongue, and larynx. About 280 injections of a 3.4-per-cent. solution were given. The effect was similar to that observed with sublimate injections but the local symptoms were much less severe and disappeared early. Secondary effects were not observed. He recommends the sublamin as a substitute for the sublimate as being more soluble, of an equal effect, and accompanied by less pain and induration.

## THE MORBID ANATOMY AND PATHOLOGY OF TABES.*

BY JOSEPH COLLINS, M.D.,
OF NEW YORK;
PROFESSOR OF NERVOUS AND MENTAL DISEASES IN THE POST-GRADUATE MEDICAL SCHOOL; VISITING PHYSICIAN TO THE CITY HOSPITAL; CONSULTING NEUROLOGIST TO THE HOSPITAL FOR RUPTURED AND CRIPPLED, ETC.

### PART III: ANALYSIS OF 140 CASES OF LOCOMOTOR ATAXIA.

THE lesions of the disease known as tabes are by no means limited to the spinal cord, but as the essential pathological change seems to be a slowly progressive decay of that portion of the peripheral sensory neuron which courses within the posterior columns of the spinal cord, the intramedullary portion, the disease is universally described as a spinal cord disease. Tabes or locomotor ataxia is ordinarily defined as a disease of the posterior columns of the spinal cord, but this statement conveys an entirely inadequate idea of its morbid anatomy. Not only are widely separated lesions of considerable severity found in other parts of the nervous system, such as the peripheral nerves, but the constituents of the posterior columns are not equally or simultaneously affected. Moreover the degeneration of the posterior columns is to a considerable degree a secondary process. The endogenous fibers of the cord are not affected save secondarily. The pathogenesis of tabes is still far from being understood, nor is the point of departure of the morbid process and its mode of progression by any means satisfactorily known.

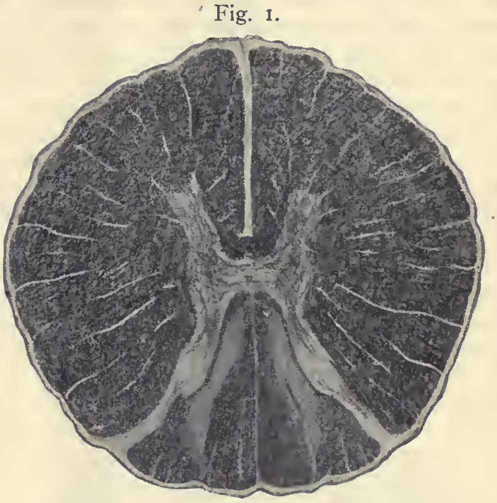
In this article I shall portray briefly the anatomical picture which one finds ordinarily in the tabetic spinal cord, basing my remarks (1) upon a study of three cords, the microscopical examination of which was undertaken for this purpose; (2) a brief review of the status of the pathogenesis of tabes and an enumeration of the theories which have been suggested and promulgated to explain the development of the disease, especially its development from syphilis.

The changes in the tabetic spinal cord vary in intensity and extent in different cases. In some instances the dorsal cord bears the brunt of the lesion, but in the vast majority of cases the dorsolumbar cord is the predominant seat of the disease. Rarely the disease is most pronounced in the cervical segment and when it is we have the disease known as cervical or high tabes. The picture presented by the spinal cord in the early stages of tabes is very different from that presented by older cases.

The spinal cord taken from the body of an individual who has suffered from tabes for a number of years is invariably smaller than the normal cord and the posterior surface often presents a sunken-in appearance. The dura is usually normal. The pia is sometimes normal but as a rule it has lost its glisten and is thickened and slightly adherent to the posterior surface of the cord and occasionally to the lateral columns as well. Some investigators, and particularly Nageotte, claim that this meningitis is constant though variable, of the same nature as syphilitic meningitis, and that it is the cause of a peculiar neuritis of the posterior roots which is an essential lesion of tabes. This will be referred to later. When the cord is cut across in the fresh state the degeneration of the posterior columns is seen as pale, white streaks most conspicuous in the dorsal and lumbar regions. The posterior roots of the dorso-lumbar region are diminished in size and the posterior horns appear small in contrast with the anterior. When the finger is passed over the cord a varying increase of its consistency, especially in the posterior part, is readily made out. If the cord has been hardened in Muller's fluid, the degeneration of the posterior columns is readily visible on cross-section to the naked eye, and has the outline of a grayish triangle.

When sections of the spinal cord stained with Weigert's hematoxylin are examined microscopically striking changes are seen in the posterior columns. It depends upon the stage of the disease how completely the posterior columns and the posterior roots are decayed. In advanced cases the degeneration may be so complete that scarcely any healthy axis cylinders or collaterals remain. (See Fig. 3.) In other instances and especially in more recent cases, the lesion, which is usually spoken of as "sclerosis" may be confined to definite and restricted areas of the posterior columns which are often asymmetrical; for instance, the lesion may be much more extensive on one side of the cord than the other and it may vary in sections taken from juxtaposed levels. In the cervical cord the degeneration may involve the columns of Goll and Burdach to a very considerable part of their entire extent as represented in Fig. 3, but more frequently the column of Burdach is spared save in cervical tabes.

Fig. 1.



Section from the Sixth Dorsal Segment showing Degeneration Restricted to External Bandelettes of the columns of Burdach.

The seeming selection by the disease process of certain areas is explained by the fact that decay of the posterior roots conditions the distribution of the lesion in the cord. There are areas in the posterior columns of the lumbar cord, and of the cervical cord as well, which remain uninvolved in early tabes. These are the so-called postero-external fields, areas which extend from the dorsomedial bundle on the posterior border of the spinal cord as far as the entering posterior root zone. They are often sharply defined from the degenerated areas (*i.e.,* it is an area limited on the inside by the column of Goll, posteriorly by the periphery, on the outside by the entering posterior root and anteriorly by the degenerated area in the middle part of the column of Burdach). This region does not remain absolutely intact even in the early cases and often is completely degenerated in the late and severe cases. It is generally believed that although it is made up largely of endogenous fibers that it also contains posterior root fibers. It is stated by Schmaus that this area in the lumbar cord is likely to be found intact when the sacral cord is not profoundly affected with the tabetic process, from which one may conclude that it is made up of fibers which ascend from the sacral cord and is therefore not affected more than the region from which it comes.

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* Part I of this series appeared in the MEDICAL NEWS of January 3 and 10; Part II on March 7 and 14.

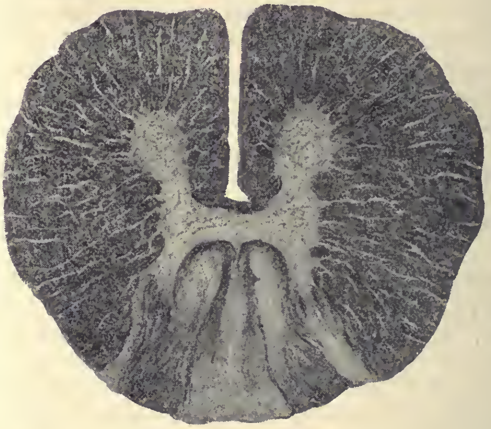
The lower dorsal, lumbar and sacral cord of a fairly recent case of tabes shows a degeneration of the posterior columns confined to that part of the column of Burdach which borders on the posterior horn and extending toward the periphery posteriorly (Fig. 2). The strips of degeneration have the appearance of thin bands and were called by Pierret who first described them "bandelettes externes" or external little bands. This area corresponds to the pathway of the intramedullary fibers of the posterior roots when they first enter the spinal cord and before they pass to the column of Goll or other tracts of the spinal cord in which they course to their destination.

It is well known that each fiber of the posterior root when it enters the spinal cord at any given level trends toward the middle and base of the posterior horn and ascends in this position for some distance, about one segment, and then turns inward to take up its position in the column or pathway in which it courses to its destination, principally the column of Goll. If the root-entrance zone, the "external bandelettes" and the column of Goll are diseased in the cervical region, in a case of tabes it shows that the root-entrance zone of the dorsolumbar region must be diseased, for the column of Goll in the cervical region is largely made up of fibers that constitute the root-entrance zone and the external bandelettes in the dorsolumbar region. The extent of the special area of degeneration in the column of Burdach that the French writers speak of as external bandelettes, will depend upon the amount of fibers that are involved. If the area of degeneration extends from the base of the posterior roots towards and nearly to the periphery, then the entire entering bundle is involved. Higher up in the cord these strips of degeneration are not to be made out.

In more advanced cases the disease causes a degeneration in the column of Lissauer, in the commissural zones, in the fasiculi whose collateral detach themselves from the external bandelettes to go to the anterior horns, the disappearance of those fibers is coincident clinically with the loss of the tendon-jerks, and in the inner half of the posterior columns, the fields extending in a medial direction up to the posterior longitudinal septum and causing what seems to be apparent uniform degeneration on each side of this (Fig. 2 and 3).

If the tabes is of the cervical region predominantly, *i.e.,* "high" tabes, naturally the pathological alterations will be most conspicuous in this region but in their distribution they are not unlike the lesions of the lower dorsal cord. When the brunt of the lesion is born by the dorsolumbar cord, the external bandelettes of the cervical cord are spared (Fig. 4), but when the specimen is from a case of cervical tabes these are degenerated as well as the columns of Goll. In the ordinary case of tabes the lesions are of maximum severity in the dorsolumbar region. They increase from below upward, so that when the cervical cord is reached the posterior and internal part of the column of Goll in many instances is degenerated. Still, as I said above, there are a great many variations in the anatomical picture which a case of tabes may present. In the most classical form of tabes all the segments of the cord, even those that are juxtaposed, are not equally diseased and it is rare except in very old cases, to see anything like a uniform symmetrical degeneration of both sides of the cord.

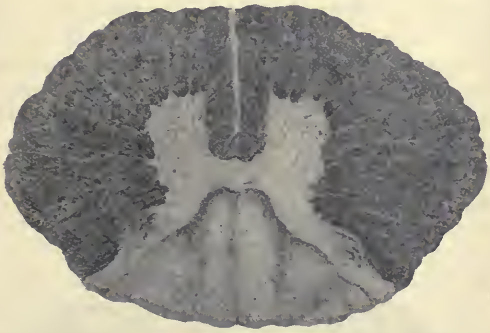
Fig. 2.



Section from Eighth Dorsal Segment, Advanced Stage of Tabes, showing Degeneration of Goll's Columns and of Anterior Portion of Burdach's Column even of the Ventral Field.

The histological details of the disease-process one gets best from relatively recent and rapidly progressive cases. When the degenerated zones themselves are studied with a view to determine the character of the change that has gone on, it is seen that the lesions consist principally of a shrinkage, atrophy and decay of the axis cylinder and its sheath which is accompanied by some proliferation of neuroglia. The neuroglia and the blood vessels are very slightly affected in tabes. Unless the course of the disease has been very rapid, there are but few neuroglia nuclei to be made out and very few granular bodies; thus the process is one of simple parenchymatous degeneration, an atrophy of the nerve tubules. Axis cylinders are found in various stages of destruction, some of them are swollen so that they have a hypertrophic appearance, others are irregular in contour and puffed out, here shrunken, there swollen, while others are shrunken and twisted. Here and there holes of different or greater or lesser size, some of them containing fat globules or myeline fragments are to be seen. If the pia is diseased and thickened the connective tissue prolongations which it sends into the posterior columns may change the appearance of the picture somewhat. The homogeneity of the process is the most striking feature. There are no signs of elementary lesions, inflammatory or productive, no foci of disease; no indications of diapadesis.

Fig. 3.



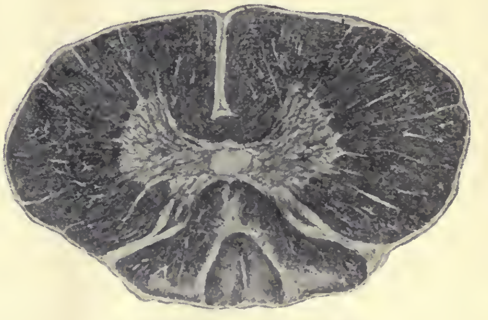
Section from Second Lumbar Segment, showing Apparently Complete Degeneration of the Posterior Columns.

It has been stated above that certain parts of the posterior columns are very little affected, *i.e.,* they are very slightly affected in contrast with the external part of the column of Burdach, the entering posterior root zone and the column of Goll. These zones that are thus relatively spared, are zones that are constituted largely of fibers arising in the cord and therefore called endogenous fibers. In the dorsal and cervical regions these zones are the commissural zones uniting the gray horns, the posterior lateral border of the posterior column and the little columns known as Schultze's "comma" while in the lumbar region they are the same commissural zone and those areas that have been described as the central ovale of Flechsig and the triangle of Gombault and Phillipe. But these are by no means always spared. The degeneration may involve everything in the posterior columns. In cases of incipient tabes the lesions of the cord may be restricted to a very narrow area. This is well illustrated by a case recently recorded by Cassirer and Strauss. The only symptom of tabes which the patient had was Argyll-Robertson pupil. On microscopical examination there was found complete symmetrical degeneration of a portion of the intramedullary prolongations of the eighth dorsal roots and in the upper part of the cervical cord and lower oblongata degeneration of Bechterew's olivary bundle.

Although affection of the lateral columns of the spinal cord is not a part of the lesions of tabes, they are frequently found affected to a greater or lesser degree. In some instances the disseminated foci of degeneration to be found here occur in connection with vascular and cachectic states. Occasionally there is found slight degeneration of the direct cerebellar tracts and Gower's tract. These changes are probably secondary to changes in the cells of Clarke's column. (Oppenheim and Siemerling).

The changes in the cord are not confined to the white matter, the gray matter is profoundly affected; especially the posterior horns. The fine fibers constituting the gelatinous substance, and the spongy portion of the gelatinous substance and the zone of Lissauer are degenerated in every case. The spongy substance proper of the posterior horns, *i.e.,* the portion adjoining the central part of the gray substance is not so profoundly affected. The reflex collaterals of the posterior roots and the collaterals of the posterior columns practically disappear. These changes give the gelatinous substance a rarefied appearance. This is well illustrated by Figs. 5 and 7, Clarke's column, which is constituted by a group of cells situated just within the neck of the posterior horns in the dorsal region and whose axones extend upward to the cerebellum constituting the direct cerebellar tract shows alterations in nearly every case of tabes. The cells themselves are not disordered, neither are their axones, but fibers that come from the posterior roots to ramify around the cells of Clarke's columns are seen, when stained with medullary sheath stains, to have the typical appearance of degeneration (Fig. 7).

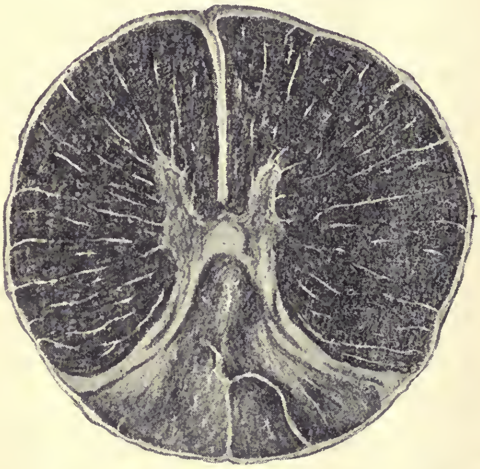
Fig. 4.



Section from Fourth Cervical, showing Degeneration of Columns of Goll and of Endogenous Fibers in Columns of Burdach.

The state of the anterior horns is in marked contrast with that of the posterior. Unless the case is a very ancient one there are no changes whatsoever. If it is, the anterior horns may present a rarefied appearance, due largely to the existence of spaces out of which cells have dropped, to enlargement of the perivascular spaces and to alterations in the coats of the blood-vessels. The anterior horn cells, when stained according to Nissl's method, may show chromatolysis, anomalous pigmentation, and even eccentricity of the nucleus. But these changes are no longer considered immutable evidence of disease. Of course, in tabes complicated with progressive muscular atrophy, there may be most extensive lesions of the anterior horn cells, if the atrophy of the muscles is of spinal origin. Here it should be said that in the vast majority of cases of tabes with muscular atrophy that have been reported, the cells of the anterior horns have been found intact. (See *Journal of Nervous and Mental Disease,* June, 1903.) A few cases of tabes with bulbar involvement have been reported in which at autopsy, changes in nuclei from which arise the nerves that supply muscles that were atrophied during life have been found. The cranial nerves that are most frequently affected are the optic, the trigeminal and the glossopharyngeal. The optic nerve is atrophied in 14 per cent. of all cases of tabes (See article on Symptomatology, Medical News, March 7 and 14, 1903). The changes in the optic nerve are those characteristic of primary decay of the nerve fibers beginning in the ganglion cells of the retina and progressing toward the optic chiasm and external geniculate bodies. There is no evidence whatsoever of inflammation. The nerve fibers of the human retina are medullated in exceptional instances only. But a case of tabes has been described in an individual whose nerve fibers were medullated and in this case the medullation disappeared early. In cases wherein there has been paralysis of the motor cranial nerves, of protracted duration, such as progressive paralysis of the eye muscles, hemiatrophy of the tongue, there is usually found degeneration of the cells of the corresponding nuclei, although these symptoms may be dependent upon a lesion of the corresponding peripheral nerve.

Fig. 5.



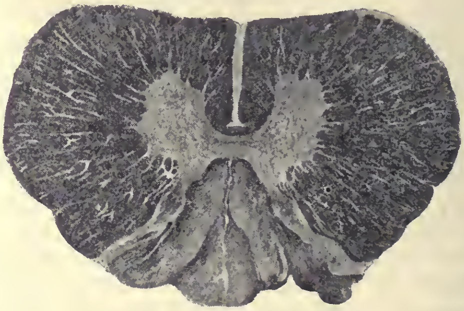
Sixth Dorsal. To show Degeneration of the Posterior Horns, "the External Bandelettes" and the Columns of Goll.

The lesions of tabes that are next most important to those of the posterior columns are found in the posterior roots and the ganglia which are developed upon them in the intervertebral spaces, the posterior spinal ganglia. The posterior roots of the dorsolumbar cord from a typical case of tabes are the seat of profound alterations; scarcely an entirely normal fiber is to be found. The fibers disappear, lose their myelin sheaths or are thin and irregular in outline, which is due to changes going on irregularly in the intra-annular segments. Many entirely empty sheaths of Schwann are to be seen, indicative of the complete disappearance of the axis-cylinders. In other fibers the sheath of Schwann has disappeared and the axis-cylinder appears like a very fine thread.

Thomas and Hauser have been able to trace the atrophy in the posterior root into the interior of the ganglion, but not as far as the cells of origin. But in most cases it cannot be traced thus far. As a matter of fact, the atrophy diminishes as it is traced into the ganglion. The affection of the roots is distinctly segmentary there being no uniform affection of long stretches of it. This has been shown recently by Phillipe.

The degeneration of the fibers is not that characteristic of Wallerain degeneration, on the contrary, it is distinctly interannular; the process being one of simple atrophy. All writers are agreed that there is a most intimate relationship between the atrophy of the posterior roots, and the "sclerosis" of the posterior columns. It has been shown by experimental destruction of the roots as well as by study of the ascending degenerations that follows pressure upon the roots, such as upon the cauda equina, that the tracts of the spinal cord that are diseased correspond exactly with those involved in tabes, especially in early tabes, that is with the primary lesions of tabes and not the secondary lesions of endogenous fibers. It does not follow, however, that this admission is a subscription to the theory that the original lesion of tabes is in the posterior roots and that the changes in the posterior columns which constitutes the most striking anatomical feature of tabes, is secondary.

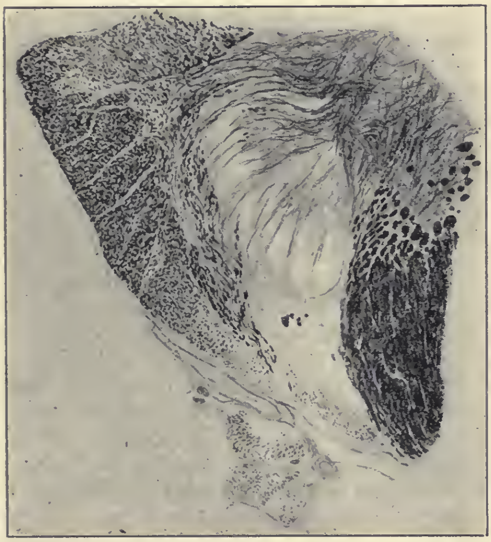
Fig. 6.



Section from First Lumbar Segment to show Typical Alteration of the Posterior Horns and Posterior Columns in Tabes.

The alterations of the cells and the root fibers of the spinal ganglia are inconstant and irregular. A few years ago after Oppenheim, Siemerling, Stroebe, Wollenberg and other German neuropathologists showed that the cells of spinal ganglia taken from tabetic patients were not infrequently the seat of alteration in structure and conformation many assumed that these alterations were responsible for the decay of the posterior rooots and their intramedullary prolongations which constitutes tabes. In other words, that the starting point of the tabetic lesion was in the spinal ganglia and that the changes in the posterior columns of the cord were secondary, the destruction being by process of Wallerian degeneration. As a matter of fact, there is no definite relationship between the amount and degree of alteration to be found in the posterior ganglia, which, by the way, is often very slight and confined to a few cells in the superior pole of the ganglion and the alterations of the posterior roots. Different investigators have found different and most inconstant lesions varying from foci of hemorrhage and degeneration of the different coats of the blood-vessels, up to increase of the connective tissue, constituting sclerosis with cytological change. Deformity of the cells, vacuolization, cloudiness, and pigmentary surcharge are the commonest changes in the nerve cells, but all of them may be absent.

Fig. 7.



To Illustrate Degeneration of the Posterior Horn and Posterior Root.

In the majority of the spinal ganglia that were examined by Thomas and Hauser the cells appeared to be normal. In some of them the cellular alterations were quite pronounced varying from simple atrophy to disappearance. They found that simultaneously with the atrophy of the cell the ganglionary capsules proliferate to such a degree that they end by filling the place occupied by the cell. It is quite difficult to seize the beginning of cellular atrophy, for in normal ganglia the dimensions of the cells are very different. These lesions, however, are not constant, but they are much more frequent and more intense when the fibers of the posterior root are atrophied in the subganglionary course and in the ganglion itself. Working with Nissl's method Marinesco has observed various lesions: Disintegration, pallor and disappearance of chromatic granulations from the large clear cells; sometimes retraction, homogeneous transformation with preservation of the volume, or atrophy of the nucleus; more rarely atrophy of the cell body. Marinesco does not accord much importance to this. In fact the cells of the spinal ganglia undergo very quickly alterations following intoxications and infections, and as they rarely present a normal aspect in the adult Marinesco concludes that sclerosis of the posterior columns of the spinal cord is not dependent upon these lesions. It is more than likely that all the alterations that have been described as occurring in the spinal ganglia in cases of tabes are secondary, either to disease of the pia or to alteration of the posterior roots in their intramedullary and supra-ganglionic course.

The peripheral nerves are often found diseased in tabes. Especially the cutaneous nerves of the lower extremities. Westphal, Pierret, Dejerine, Pitres et Vaillard, Oppenheim and Siemerling, Joffroy and Achard, Nonne and others have studied these concomitant lesions of tabes. No one save Nonne has found them constantly, but as S. Mayer has pointed out, the alterations in many cases do not surpass those sometimes found in normal nerves.

Changes of similar nature are often found in the motor nerves and in the mixed nerves. The anatomical process, which is that of neuritis, reminds of the change in the posterior roots and is probably of the same nature. Cases of tabes are occasionally met with in which muscular atrophy or paralysis of a group of muscles is a symptom. In such cases it is not improbable that a neuritis of motor nerves is responsible. In very rare instances one of the large nerve trunks, such as the sciatic, ulnar and musculo-spiral is found diseased, but this like disease of the anterior roots is a very uncommon occurrence.

There have been a few cases recorded such as the writers in the *Journal of Nervous and Mental Disease*, June, 1903, in which most profound and extensive degeneration of the nerves and muscles were found and upon which the muscular atrophy was dependent.

These changes of the peripheral nerves, have been considered by some to be suggestive that the entire peripheral sensory neuron is the seat of the disease-process in tabes. Although the nature of the lesion in the peripheral nerves is similar to that of the posterior roots, the process is in no way to be compared either in constancy or intensity with that of the posterior roots.

Changes in other parts of the nervous system have been described by different investigators; in the cerebrum by Jendrassik, in the cerebellum, especially in the corpus dentatum and the fibers going to these nuclei by Jellinek, in the splanchnic and thoracic sympathetic by Roux, but it is more than likely that those of the two first are incidental, not an integral part of the anatomical picture produced by tabes. The changes in the sympathetic system and the representation of the sympathetic system in the spinal cord is another matter. It is not improbable that future investigation will reveal lesions primary or secondary of this important system.

Klippel has found pathological alteration of the ganglia of the cranial nerves that correspond to spinal ganglia, *i.e.*, the ganglion of Andersch of the glossopharyngeal nerve and the ganglion of Gasser of the fifth nerve, and also of the hippocampal gyrus. He is inclined therefore to the belief that tabes is a disease of the centripetal system of neurons. These changes described by Klippel should not be taken too seriously for similar ones are found in other protracted nervous diseases.

(To be Continued.)

## LEUCOPLASIA IN SECONDARY SYPHILIS.[1]

BY DOUGLASS W. MONTGOMERY, M.D.,
OF SAN FRANCISCO, CAL.;
PROFESSOR OF DISEASES OF THE SKIN, UNIVERSITY OF CALIFORNIA.

LEUCOPLASIA rarely occurs in the secondary stages of syphilis.[2] In fact up till a very short time ago it was held to be impossible for it to appear at all as a result of recently acquired syphilis.[3] Now this view is changed and leucoplasia of secondary syphilis is an ascertained fact. I wish to present to you this evening a man suffering from this interesting lesion.

The patient, a Scotchman, thirty-seven years of age, came to the University Clinic, August 23, 1901. Except for rheumatism, the history he gives of his family is good. Both his father and mother are alive. His mother is seventy-two years of age and suffers from sciatica, and for years has had rheumatism of the hands and feet. An older brother has rheumatism of the left shoulder. The patient said that in August, 1900, while in Manila, P. I., he had a sore on the lower surface of the penis near the scrotum which was long in healing, but finally disappeared under treatment with carbolic ointment. In October of the same year he was bedridden with rheumatism of the right ankle. About February, 1901, he had a universal rash and sores in the mouth, presumably the first symptoms of constitutional syphilis. In April, May and June his hair fell out so copiously that he was afraid he would become bald, and there were sores in his scalp. Sometime after the first appearance of the symptoms of constitutional syphilis the patient noticed a decided dent or hollow on the radial margin of the nail of the middle finger of the right hand, and the nail of the right great toe began to grow crumbly and brittle at its free margin. By crumbling and breaking off, this toe nail retreated back as far as the middle of the nail bed. Lately it has begun to grow out again.

When he came to the clinic he had a generalized lenticulopapular eruption which was arranged in groups. The papules were very large and there were six to a dozen of them in each group. He had about a dozen such groups over the back, and about half a dozen over the chest and abdomen. As a result of this eruption he has a number of scars, and those of the lower extremities are still stained a deep coffee brown. There was no demonstrable enlargement of the lymphatic nodules.

The most striking and troublesome lesions, however, were in the mouth, where there were a great number of mucous patches. The dorsum of the tongue was covered with large flat papules. During our entire observation of the patient the mucous membrane of the mouth and tongue has shown a more than ordinary tendency to irritative lesions, and what the patient has suffered is unrecountable. When the suffering would become extreme he would take several drinks of whisky neat, which, while it temporarily assuaged the pain, ultimately added to the irritation.

There is a deep furrow down the middle of the tongue, which is probably a natural feature. The dorsum of the tongue posteriorly is covered with a coating such as is seen in indigestion. Over a large part of the anterior surface of the dorsum of the tongue there is a white or opalescent coating which is particularly dense, solid, smooth, and white in two patches. These patches are situated symmetrically one on each side of the median line well out toward the edges of the tongue, where there were formerly two persistent mucous patches. These particular mucous patches, which will be mentioned later on when we come to speaking about treatment, were situated in leucoplasic areas, and were covered by a dirty gray coating. With a low magnifying power the papillæ of most of the dorsum of the tongue can be seen to be covered with a dense white covering, as if a horny change had taken place in the epithelium, constituting a keratosis.

The tongue is not at present nearly so painful as it used to be. At one time it was spontaneously painful. Now it is only unduly sensitive and tender to such things as hot drinks, pepper, spices, and to touch from food or the teeth. His speech is a little thick, and one can appericate by it that the tongue is not as supple and flexible as it should be. The tongue does not feel to be indurated. The tissues of the floor of the mouth appear to be fuller than normal, but this the patient says is a family characteristic, and not a symptom of disease. There is, however, some enlargement of the lymphatic nodules under the jaw.

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[1] Patient demonstrated before the California Academy of Medicine, Jan. 27, 1903, and before the Society of German Physicians, Feb. 3, 1903.

[2] Danlos, in reporting a case of leucoplasia of the tongue in secondary syphilis, said he had searched the literature up to that time without finding any reference to it.—*An. de Derm. et de Syph.*, Serie III, Tome IX, page 264, March 10, 1898.

[3] Fournier, in the discussion on the case reported by Danlos, said he had formerly held the opinion that leucoplasia, when a result of syphilis, was a late manifestation, but now he recognized also that it does occur in the early stages of the disease— *An. de Derm. et de Syph.*, Serie III, Tome IX, page 265.

Benard, in the article on leucoplasia in the *Practique Dermatologique*, par E. Besnier, L. Brocq and L. Jacquet, says that leucoplasia may occur both in the early and in the late stages of syphilis, but by far most frequently in the late stages.

In spite of repeated warnings the patient continues to smoke about two or three cigars a day, and his teeth are not kept in good condition. The etiological importance of tobacco in leucoplasia has long been recognized. Tobacco alone can cause the disease, and in a list of etiological factors recently given by Benard[4] tobacco is rated as the most important local cause.

Benard in the above mentioned article[5] draws attention to the fact that leucoplasia of the tongue in secondary syphilis may arise simply as such from a healthy appearing tongue, or it may follow a superficial glossitis or mucous patches of the tongue. The latter was its mode of origin in the present instance. In this case the slow subsidence from an intense inflammatory to the present indolent process could be followed. When the patient first came to the clinic the appearance of the back of the tongue with its thickly placed flat papules was most striking. It was the "dos de crapaud," the toad's back of the French writers. The papules slowly subsided, giving place to an acute superficial glossitis. At this stage he had the bald smooth tongue of secondary syphilis, with numerous and frequently recurring mucous patches. As the activity of the inflammatory process subsided the leucoplasia appeared, and the mucous patches became less and less frequent, until now there are scarcely any, and the few that appear are usually situated on the inner surface of the lips or cheeks. As may be inferred from the foregoing history the first appearance of the leucoplasia was very insidious, and the date of it is hard to fix, but approximately it begun about the middle of the year 1902, or about one year and eight months after the appearance of the chancre.

The diagnosis of leucoplasia of the tongue is an important matter, for there are affections that closely resemble it. In the first place this is not a mucous patch. A mucous patch would be more active, more moist, more painful, and more changeable in its appearance. It was indeed very interesting in this case to see the gradual subsidence of the mucous patches, and the equally gradual appearance of the leucoplasia.

It is not lichen planus. Lichen planus would in all probability be thicker than the present leucoplasia, and would also likely be accompanied by lichen planus of the cutaneous surface.

The prognosis of recent leucoplasia arising in the course of secondary syphilis is better than in leucoplasia in general. Barbe[6] and Gaucher[7] both secured, through treatment with mercury, a disappearance of the lesion. Although the leucoplasia in the present instance is slowly improving, and the tongue is becoming less irritable, yet with the continuance of smoking there is not great hope of a complete cure. It will also be noticed that in the present case there is not one but several etiologic factors all congruing to a natural close, leucoplasia. Two of these factors are constiuttional; arthritism as shown by the family history, the attack of rheumatism and the lumbago, and syphilis. And three of them are local; smoking, ill-kept teeth, and alcohol. Latterly we have reason to believe alcohol is only sparingly taken. The leucoplasia here may gradually settle down to the more chronic leathery form of the disease, and from this go slowly on to the final development of epithelioma of the tongue.

It is interesting to note that three out of the four cases hitherto reported as leucoplasia arising in secondary syphilis have occurred in women.[8] Leucoplasia in general is more frequent in men than in women.[9] Too few cases have yet been recorded to generalize from, but it is remarkable that it should have occurred so frequently in women, and also that the lesion was cured, in at least two instances, after a short treatment. These facts would indicate an essential difference between some of these cases of leucoplasia and leucoplasia in general.[10]

The first treatment the patient received for his syphilis began on entering the University Clinic, Aug. 23, 1901, about one year after he first noticed the chancre. Mercury was at first given tentatively, because we were only able to see the patient about once every two weeks, and we feared to cause a mercurial stomatitis, and thereby to increase the irritation in the mouth. Because we felt constrained to give small doses of mercury, we added iodide of potash as an aid in combating the syphilitic virus. Later he was put on mercurial inunctions with a hypodermic injection of a centigram of bichloride of mercury once a week when he came to the city. As soon as possible, however, he was put exclusively on hypodermic injections of corrosive sublimate, as being the most effective remedy in such affections.

Mercury is almost universally conceded to be a more powerful antisyphilitic drug than iodide of potash, and when given hypodermically it is less irritating to the alimentary canal than when given by the mouth, and avoidance of irritation is of importance in these cases. Barbe cured his case of leucoplasia of the tongue in secondary syphilis, above mentioned, by giving injections of a soluble mercurial salt intramuscularly. Although by some observers calomel or some other insoluble mercurial is preferred to the soluble salts yet the bichloride was the salt used in this case. There are two drawbacks to calomel or the other insoluble mercurials as injections, their painfulness and the possibility of killing the patient, either by embolism, or by too rapid absorption of the drug. For the past five months the patient has resided in the city and has been receiving one or two centigrams of bichloride of mercury hypodermically three times a week. Locally the tongue has been swabbed with a ten per cent. solution of chromic acid. The above mentioned persistent mucous patches were induced to heal by scrubbing them with a strong (five per cent.) solution of bichloride of mercury in alcohol. It was considered very important to secure healing of them, for fear they should become the starting point of epithelioma. The applications of sublimate were only employed as a necessity, and no further than to secure a healing of the ulcer, because both severe mecurial treatment, with its attendant buccal irritation, and severe cauterization have been taxed, and probably justly, as among the causes of leucoplasia.

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[4] The list of causes reads as follows: Syphilis, arthritism, nicotinism, excessive mercurial treatment, alcohol, spices, vinegar, unclean, irregular or absent teeth, hot drinks, etc. Benard also believes that syphilis causes leucoplasia only through its irritative action on the tissues, and that therefore it is a parasyphilide, not a true syphilide. *La Pratique Dermatologique,* par Besnier, Brocq et Jacquet, Tome II, pages 1,220-1,221.

[5] *La Pratique Dermatologique,* par Besnier, Brocq et Jacquet, Tome II, page 1,020.

[6] *Ann. de Derm. et de Syph.,* Serie III, Tome IX, page 571. Used injections of the cyanide of mercury.

[7] *Ann. de Derm. et de Syph.,* Serie IV, Tome III, page 268. Used injections of mercuric benzoate.

[8] Danlos' case, *Ann. de Derm. et de Syph.,* Serie III, Tome IX, page 264; Barbe's case, *Ann. de Derm. et de Syph.,* Serie III, Tome IX, page 570; Gaucher and Barbe's case, *Ann. de Derm. et de Syph.,* Serie IV., Tome II, page 268; Danlos' second case, *Ann. de Derm. et de Syph.,* Serie IV, Tome II, Page 631.

[9] Of a list of cases of leucoplasia of the tongue, collected by A. Neisser, both from his own personal observations, and from the reports of authors, 547 were of men and only 24 were of women. As Neisser remarks, the difference in these figures does not at all correspond to the difference in the occurrence of syphilis in men and women. Leukoplakie und Gumma der Zunge, von A. Neisser. Neisser's stereoscopischer medicinischer Atlas, Neunte Lieferung.

[10] The lesion disappeared in Barbe's case after six injections of cyanide of mercury, and in Gaucher and Barbe's case in less than two weeks under subcutaneous injections of benzoate of mercury (2 cgr. a day).

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## MEDICAL PROGRESS.

### SURGERY.

**The Suppurating Abdominal Wound.**—Mural abscess is one of the most troublesome complications following abdominal section to which Wm. E. Darnall (Am. Gyn., March, 1903) finds but little attention given in text-books on surgery. The cause of such suppuration is not always clear. Probably the lack of care in preserving the vitality of the tissues is a factor. It occurs sometimes, however, when every possible precaution has been taken and the incision has been united in the most approved manner. Causes that undoubtedly predispose to it are the bruising of the fatty layers by rough handling or metal retractors, carelessness in checking bleeding points in the incision, thus allowing small lacunæ of blood to form, which offer suitable focus for infection; the conveying of infection through the skin by the introduction of through and through sutures from the surface of the skin inward, and the using of non-absorbable suture material. Four or five days after the operation the symptoms first show themselves. And then as an abscess. In some cases the abscess is small and it may heal in a few days after the pus is evacuated. In others the large wound cavity may continue to discharge for weeks. When the abscess is deep down between the muscles and the peritoneum the diagnosis may be confused with localized infection about the pedicle of a pelvic tumor. The superficial character of the swelling, however, usually renders the diagnosis clear. If the abscess is discovered early the removal of one or two sutures and the evacuation of the pus may restrict the destructive process. In a large proportion of the cases, however, the suppuration travels the whole length of the incision, making it necessary to open the whole length of the incision and to convert the abscess into a wide open field. Ordinarily these wounds are permitted to heal by granulation, which process requires many weeks of careful dressing. Dr. Darnall has devised the following method of closing such a wound. The patient is given a few whiffs of the anesthetic. The edges of the incision are then gone over lightly with a curette merely to freshen up the granulations. In the bottom of the wound is then placed a narrow strip of iodoformized gauze or a few strands of silkworm gut for drainage. A strip of zinc oxide plaster about six cm. wide is now laid on each side of the incision for about two cm. from its margin, and interrupted sutures are passed between the inner edges of the adhesive plaster across the incision without penetrating the skin. An assistant brings the edges of the incision together over the drain by using pressure from each side of the wound. The sutures are now tied tightly across the incision. The two sides of the incision being closely approximated by this means, union takes place promptly, and when the drain is removed only a straight line scar is left.

**Hypertrophy of the Synovial Fringes of the Knee-Joint.**—Very little consideration has thus far been given to this condition as an independent disease, and its description has usually been included in that of floating cartilage, internal derangement of the knee-joint and chronic synovitis. E. G. Abbott (Jour. Am. Med. Asso., April 25, 1903) reports 12 typical cases and discusses their surgical aspects. The etiology is obscure. In a few cases traumatism plays an important part, in others no injury can be traced, but it seems very probable that the condition may be due to a weakened arch of the foot. The latter prevents fixation of the tibia and there is a consequent tendency to a stretching of the ligaments of the knee. A weak, pronated foot is very closely associated with many cases of the disease and here the use of the plate to support the arch of the foot has been of great service in remedying the trouble in the knee joint. Pathologically the disease consists of a nodular enlargement of the synovial fringes which project into the joint, with more or less thickening of the membrane. There is fluid present in a few cases. No traces of bacteria can be found. The first symptom is usually some difficulty in walking, there may even be a sudden pain which is bad enough to cause the patient to fall. An acute synovitis may be present for a time and then subside, The condition grows worse until there is a partial or complete loss of function in the joint. In some cases inability to extend the leg appears, and the quadriceps muscle atrophies. Examination shows a slight bulging of the thickened membrane on either side of the patella tendon, and a little higher up the small portions of the membrane can be easily felt under the finger. The joint shows no redness or heat, except in acute attacks. There is no crepitus present. The ligaments are lax and some lateral motion is possible. The treatment is mechanical and operative. The cause should first be ascertained, whether trauma or relaxed ligaments. The mechanical treatment consists in correcting any condition that may exist which tends to strain the muscles and ligaments of the joint. Hot air applied every other day and strapping with adhesive plaster are of benefit. When flatfoot is present, a plate will aid in bringing the joint surfaces into normal apposition, and by fixing the foot the knee is made more stable. A brace which limits motion in cases where the ligaments are lax, is very useful. In the operative treatment, the joint may be exposed by a U-shaped incision, but the patella tendon need not be divided. The fringes are then removed and the incision closed, care being taken to approximate the synovial surfaces. The limb is then kept in plaster for two weeks, after which motion is commenced.

**Osteoplastic Amputations at the Knee.**—Operations derived from the amputations of Gritti have the general faults inherent to these interventions in being more complicated than simple amputations of the thigh or subcondylar amputations. They appear to have the following advantages, however, according to J. A. Bussiere (Rev. de Chir., March, 1903). His patients have been able to walk continuously and protractedly upon the patella. The patella was fixed in a good position, so that pressure was localized upon all its anterior surface and by various modifications, the tissue there becomes accustomed to pressure, perhaps by the formation of a bursa, which is an advantage in the wearing of artificial limbs. Finally, there was no wasting, no tenderness, no retraction, and no conicity of the stump in the result. Compared with simple amputation of the thigh, the advantages of this operation are: Somewhat less danger in that the section is relatively further away from the trunk; a longer stump, sometimes by 8 or 10 cm., possibility of the pressure of walking on this stump; more easy use of artificial limbs because the muscles of the thigh are less damaged; preservation of the muscles and their tendons, which gives greater power and wider mobility to the thigh; and finally, section of the bone in changed spongy tissues below the medullary canal gives less likelihood of conicity. The subcondylar amputation is the only one which may be compared to Gritti without disadvantage. Both of these involve a disarticulation at the knee and each may have its own indications, according to the degree of damage which necessitates the sacrifice of the limb at the joint or through the condyle and the femur.

**Results of Decapsulation of the Kidney.**—In a study of the changes noted in the urinary and peri-urinary tissues of dogs after decapsulations of the kidneys, the following are the conclusions offered by H. A. Johnson (Ann. of Surg., April, 1903). The capsule of the normal kidney consists of two distinct layers, an outer and thicker and an inner and thinner capsule. The latter is a direct continuation of the intertubular connective tissue. In the operation of decapsulation, the outer layer only is removed, leaving the inner lacerated but adherent to the surface of the organ. At first an exudate appears on the free surface of the kidney, which, with the remains of the inner layer, finally becomes a fibrous investment, resembling the normal capsule in that it strips readily, with the passage of time becoming more and more firm. Microscopical examination shows that in some cases this is thicker and in other cases thinner than the original capsule. The former is more generally true. Variations in thickness in the same specimen also occur. Albarran and Bernard in experimenting on rabbits observed the formation of the new capsule up to six months, and found it always thicker than the original after two months. The structure at least up to three and a half months is not differentiated into these layers, but is one homogeneous fibrous tissue. It will also form under adhesions, and may be recognized as distinct from them both microscopically and macroscopically. There is sometimes an infiltration with round cells and proliferation of the intertubular connective tissue of the cortex, without, however, affecting the glomeruli. The dogs in whom these changes were noted remained perfectly well as far as was shown by appetite, strength and playfulness. A most important observation is the fact that in no case was there any considerable anastomosis between the urinary and the peri-urinary blood vessels. In one dog, at the same time decapsulation of one kidney was performed, the urinary artery of the other was ligated. This presumably called for increased activity in the circulation of the other kidney. It was all made up, however, by the increased size of the urinary artery and vein, and not through any peripheral anastomosis.

**The Surgical Treatment of Anuria.**—In a study of the subject of anuria, A. D. Bevan (Ann. of Surg., April, 1903) offers the following brief discussion: Total suppression of urine occurs, (1) from mechanical obstruction of the ureter of a single functionating kidney of an individual when the other kidney is either totally absent or totally destroyed by disease; (2) it arises from mechanical obstruction of one ureter in an individual possessing two functionating kidneys with increased intra-urinary pressure on the obstructed side, which, by reflex nerve action, prevents the unobstructed kidney from acting. This is renal reflex anuria. After a nephrotomy the involvement of the various nerves in the pedicle may produce a reflex anuria. (3) It may be due to a trauma of both kidneys, which, for a time, or until death is followed by complete suppression of function, or to trauma of one kidney, which, the reflex action, so affects the uninjured kidney that complete anuria results. (4) Another cause is acute nephritis, as sometimes seen in scarlet fever and other forms of septicemia. (5) It arises also from obstruction of practically all kidney tissue, as the result of such chronic diseases as tuberculosis, cystitis, degeneration of the kidney and the like. Active factors in exciting anuria are certain poisons, of which phosphorus, lead, turpentine, ether and chloroform are examples. (6) Urinary fever, resulting from the passage of a sound or catheter is a peculiar condition often causing that symptom. (7) In the peculiar polymorphous symptom-complex called hysteria usually acute anuria may arise. Final conclusions concerning this condition are, (*a*) There is great clinical importance in recognizing the three forms, obstructive, reflex and non-obstructive; (*b*) there is urgent necessity of surgical interference in the obstructive, and reflex forms, and there may be virtue in it in the non-obstructive cases; (*c*) in the first two varieties as named, a rapid nephrotomy should be done on the side of pain, tenderness and rigidity; if necessary, the operation should be bilateral; (*d*) nitrous oxide anesthesia is probably to be preferred; (*e*) time-consuming operations, which permanently relieve the obstruction, are to be postponed to a later period, when the patient shall have recovered from his anuria; (*f*) an operation should be done early, certainly by the beginning of the third day.

**Primary Carcinoma of the Appendix.**—Careful study of this subject offers the following conclusions, according to A. W. Elting (Ann. of Surg., April, 1903). Primary carcinoma of the appendix is not so rare as hitherto supposed. Every appendix removed, at autopsy or operation, if at all diseased, should be examined most carefully with reference to this point. The relationship of primary carcinoma to chronic appendicitis, especially of the obliterated type, seems to be definitely established. Primary carcinoma of the appendix shows a tendency to develop at a comparatively early period of life, and it does not show a marked tendency to extension or secondary appendicitis. Symptoms of primary carcinoma in this viscus are those of chronic appendicitis. A definite diagnosis is in the majority of cases impossible. The treatment of the disease should always be operative.

**Diagnosis of Intestinal Injury.**—Abdominal contusion so frequently results in injury to the contents of that cavity that the following points are worthy of note. R. G. Leconte (Ann. of Surg., April, 1903) says that the rapidity with which grave symptoms develop depends upon three factors, namely (1) the amount of food present in the alimentary canal; when the stomach or intestine contains food or liquid feces, immediate leakage takes place, with a correspondingly rapid development of symptoms. If, however, the injury occurs after a long fast, there may be scarcely a symptom for many hours, because there are then no intestinal contents to escape and because also the usual bacteria of the mucous membrane are diminished in number by fasting. (2) A wound in the upper portion of the alimentary tract and part of the stomach or one at the beginning of the jejunum will give symptoms of danger less rapidly than one at the end of the ileum, owing to the fact that the upper portion of the intestinal tract contains comparatively fewer and less virulent organisms than the lower portion. (3) When the damage has not had the result of immediate perforation, as in a mesenteric injury or an injury to one of the loops of the bowel, grave symptoms may not occur for days, weeks or even months.

**Primary Tuberculosis of the Breast.**—The diagnosis of tuberculosis of the breast, according to W. S. Schley (Ann. of Surg., April, 1903), cannot, in its earlier stages, be made from its clinical symptoms and macroscopic appearance. This is particularly true of the discrete form, and when enlarged glands or evidence of a tuberculous focus elsewhere are lacking. If the disease is well advanced or tuberculosis exists or has existed in some other part, there is less difficulty. In the majority of cases reported in literature, the diagnosis was not made prior to operation. The tumor may be mistaken for a simple cyst, fibro-adenoma, carcinoma, sarcoma and actinomycosis. It may also be necessary to consider chronic interstitial mastitis. A simple cyst is usually more circumscribed, fluctuates earlier, is painless and has no enlarged glands; aspiration demonstrates their character. Fibro-adenoma is more difficult and is apt to occur in young adults, and be of slow growth. Fibroma is more common, more distinctly movable in the gland and the axilla is free. It is possible to find tuberculosis engrafted upon such a simple adenoma. In the early stages of carcinoma there may be likewise confusion, but as a rule this disease begins later in life, is of more rapid progress and more painful. The glands of the axilla do not suppurate and are not painful at so early a date. Tuberculosis and carcinoma have been known to coexist in the breast. Sarcoma grows rapidly and involves the skin earlier. With sarcoma, the cutaneous veins are apt to be enlarged. Gumma is recognized by its history, by coincident lesions and by its responsiveness to antisyphilitic treatment. Diffuse syphilitic mastitis in actinomycosis the glands of the axilla are not usually enlarged. The fresh granulations of the fungus are formed. In chronic mastitis there is a lack of granular ulcerations in the axilla. The field is less that of a mass and more that of a spread out or diffuse process. The excision of a small piece of such tumors with a microscopical examination is necessary for the diagnosis. Of the methods of treatment employed in the cases reported in literature, the following are to be noted: Curetting of sinuses; cauterizing of sinuses; injecting of sinuses and cavities; incising and aspirating of abscesses; removal of tumor alone; of axillary glands alone; of the tumor and a portion of the breast with the tumor; and finally and probably more successful, removal of the breast with the axillary glands.

**Instrument to Protect the Brain during a Craniotomy with the Gigli Saw.**—The following sensible device for protecting the brain during craniotomy with the Gigli saw is described by F. G. Schäffer (Ann. of Surg., April, 1903). In order to control hemorrhage in the scalp, he passes a rubber tube twice around the head and secures it against slipping by a few stitches of silk carried through the scalp and tied at three or four points. After the four holes which mark the sides of his trap-door are drilled through the skull, a watch-spring and a brain protector of the same material, connected, are passed between the skull and the dura mater. The watch-spring and protector are now disconnected and the saw is attached to the loop in the former, which is then withdrawn, carrying the saw with it through the holes, leaving the protector behind. The saw-cut is now made so that the flat watch-spring protector lies between the dura mater and the skull.

**Shock Produced by General Anesthesia.**—In studying shock from anesthesia it is not only essential to consider the specific toxin of the anesthetic used, but the resulting toxic bodies generated through the immediate or more remote influence of general anesthesia. F. B. Turck (Jour. Am. Med. Assoc., May 2, 1903) has recently made some experiments with ether and chloroform on dogs and deals with the anesthetic as a cellular poison, with the disturbances of function as a result of the anesthesia, and with the toxins that are evolved either from the direct effects of the anesthetic or from the disturbances of certain functions of the body. He finds that shock is a very complex phenomenon. The circulatory disturbance is a direct result of the chloroform or ether acting on the vasomotor centers. Their prolonged action on the splanchnic circulation results in congestion associated with fall in temperature. The toxins of ether and chloroform acting on cells, may produce toxic products, and from these, symptoms of auto-intoxication, associated with the formation of hemolytic and agglutinating bodies and precipitins. The disturbances of elimination result from retention of toxic products. The blood serum becomes less resistant to bacterial toxins and also to the development of saprophytic and pathogenic microorganisms. This is partly explained by the changes observed in the sera, such as diminished antiferment properties, etc. Reflex irritation of the alimentary tract may result from the excretion of the anesthetic into stomach and intestines, or atony may increase the formation of toxins in the stomach, and the accumulation of gases interfere with the circulation. There is increased toxicity of the stomach contents in the presence of chloroform and ether.

**Non-Medicinal Treatment of Constipation.**—The advisability of relying upon non-medicinal methods of treating chronic constipation is realized by all, but it is frequently impossible to secure satisfactory results without at least temporary reliance upon some drugs. S. G. Gant (N. Y. Med. Jour., April 18, 1903) has not resorted to drugs in the treatment of these cases in many years and he details the methods which he employs. Massage is one of the most essential features in the treatment of chronic constipation. In addition to kneading the colon, special massage should be given to the small intestine, liver and rectum. It improves the circulation, stimulates nerve centers and restores tone to inactive muscles. It loosens adhesions, excites the liver and intestinal glands to secretion and assists peristalsis. Electricity in the form of faradism has proven to be a valuable adjunct. The positive pole may be applied over the spine or within the rectum and the negative pole is moved about over the small intestines, colon and liver. Enemata of soap-suds are sometimes necessary early in the treatment of constipation, to secure evacuations until the bowel is able to relieve itself, but the continued daily use of injections is to be deprecated. In addition the patient must observe the following rules: (1) Go to stool at the same hour daily; (2) meals should be taken at regular intervals, and plenty of time should be taken to masticate the food; (3) eat sufficient fruit and drink an abundance of water, especially before breakfast; (4) take a cold bath every morning, to be followed by brisk rubbing; (5) take regular outdoor exercise; (6) change from sedentary to active occupation if necessary. Divulsion of the sphincter should be done at the earliest opportunity when constipation is induced by hypertrophy or spasm of the muscle. Partial or complete division may be practised when the muscle is very thick or when divulsion is inefficient. Valvotomy should be performed when one or more of Houston's valves have become hypertrophied and offer obstruction to the descent of the feces. The rectal valves can be satisfactorily divided without pain, danger or confining the patient to his room by the use of the Gant valve-clamp, which can be applied in the office and which cuts its way out by pressure necrosis and comes away with the feces in four to six days, leaving the severed edges of the valves widely separated. Valvotomy has given very good results in many cases, but frequently necessitates the use of the above procedures as well.

**X-Ray Treatment of Pseudoleucemia.**—The treatment of this disease has previously been very unsatisfactory and in spite of early operation death has been the invariable outcome after a comparatively short duration. N. Senn (N. Y. Med. Jour., April 18, 1903) reports two cases of this disease, in both of which the glands had reached a considerable size and were gradually advancing. In the first case 34 treatments were given by the X-ray, an intermission being found necessary after the tenth exposure on account of the development of a dermatitis. In the second case after 15 treatments a slight dermatitis appeared, and at the same time symptoms pointed to a slight toxemia. There was a loss of appetite and an increase in the anemia. After a suspension of treatment for three weeks, during which time he rapidly regained flesh and strength, he submitted to 12 more treatments with a further diminution in the size of the glands. In fact both cases have now so far recovered that the glands are barely palpable and the general health is markedly improved. Undoubtedly the constitutional disturbances which followed the prolonged use of the X-ray, and which set in simultaneously with the progressive diminution in the size of the glands were due to a toxemia caused by the absorption of the products of degeneration. This was also probably the cause of the increased size of the spleen which was noted in the second case. The X-ray has thus proven itself capable of curing another previously considered hopeless disease, and when experience has taught us how burns may be prevented and toxic symptoms avoided without reducing the curative effect, we shall possess a most valuable remedy.

**The Surgical Treatment of Pruritus Vulvæ.**—The treatment of idiopathic cases of this condition is among the unsolved problems of gynecology. Among the surgical procedures suggested for the relief of this condition is the resection of the nerves which supply the vulva. This has usually been limited to the pudic nerve, and the disadvantages are that the sphincter ani is deprived of its innervation and incontinence of gas and feces result. B. C. HIRST (Am. Med., May 16, 1903) claims that the only method certain to accomplish the desired result is to cut off all the sensory nerve supply to the part, and this is made up of the inferior pudendal, the ilio-inguinal, and the genital branch of the genitocrural nerves. The incisions are four in number: two in the groins as for an Alexander operation, and two in the buttocks parallel with the ascending ramus of the ischium, beginning just above the tuberosity and extending upward about two inches. By the groin the genital branch of the genitocrural and the ilio-inguinal nerves can be readily exposed by careful dissection, although it may be necessary to open the inguinal canal by incising the deep fascia. After the nerves are isolated they are divided and as long a distal piece as possible is freed and extracted. The inferior pudendal nerve is readily isolated where it crosses the ramus of the ischium, about an inch above the tuberosity. The perineal branches of the pudic are not so easy to discover, but a careful dissection should display them in the upper outer portion of the ischiorectal fossa. If the clitoris is involved, its dorsal nerve must be resected. The author reports two cases in which this method met with great success. It still remains to be seen, however, whether this procedure may not in time be followed by some atrophic changes and the development of a kraurosis vulvæ.

**Ethyl Chloride as a General Anesthetic.**—In a study of ethyl chloride for use in general anesthesia, W. J. MCCARDIE (Lancet, April 4, 1903) offers the following conclusions: He says that he has not tried ethyl chloride for the largest operations because he sees no advantages in it over ether or chloroform, for one is working within narrow limits because of the tendency to quick return of consciousness. He does not think that very quick recovery (in one or two minutes) after major operations is of advantage to the patient, who would too often awake to consciousness of acute pain, mental distress and shock, apart from the fact that his immediate surroundings and removal to bed would be, to say the least, very unpleasant. However, hernial, renal and other operations have been done under ethyl chloride administered well over an hour in the longest cases. It is well recognized that all narcotic drugs have limitations, and ethyl chloride certainly has them. He thinks, with many foreign observers, that ethyl chloride is well suited for many short operations, lasting up to fifteen or twenty minutes. Especially for short throat operations by skilled and quick operators, and for certain dental cases, ethyl chloride is of great advantage. As compared with ethyl bromide, which is much used abroad instead of "gas," ethyl chloride is safer because, as Binz says, the bromine compounds have a much more lasting and toxic effect on the tissues than the chlorine compounds. According to Overton, narcosis with chlorine compounds may be kept up much longer than is the case with bromine derivatives. This probably depends on the fact that watery solutions of bromine compounds gradually split up and give off free bromine. Certainly, the death rate is much less in ethyl chloride than in ethyl bromide. Again, ethyl bromide leaves behind it a garlicky smell and taste which persists in the patient's breath for one or two days after. The drug, too, is very liable to become impure on keeping. In concluding, he says with regard to the first and all-important question of safety, that he has given ethyl chloride 450 times, and he has never had any trouble during narcosis ascribable to the drug itself. He gives it now with confidence, and out of a total of more than 1,000 cases, last year, of administrations in general, as apart from dental surgery, he has administered it about 350 times. He judges that any serious effects would be seen first in the respiratory apparatus and secondarily in the heart. The general action on the circulation and respiration appears to be stimulative.

**A Case of Iodoform Poisoning.**—In describing a case of iodoform poisoning, ALAN H. MUIR (Lancet, April 4, 1903) gave the following facts: He said that the patient, a man aged thirty-five years, was admitted to the hospital on March 5, 1903, with a large nontuberculous abscess on the calf and the thigh of the left leg. The temperature was 102° F., the pulse 100, and the general condition fair. On March 6 the temperature ranged from 98 to 99° F. Next morning he opened the abscess, irrigated the cavity and put in a connecting drainage tube. While the assistant was putting in iodoform, quite half an ounce or more dropped accidentally into the large cavity. For twenty-four hours the temperature remained normal. At 8 P.M. March 8, the patient had a rigor, when the temperature rose to 102° F., and two hours afterward it was 104° F., the pulse being 140 and weak and thready, and the respirations being 24 and normal in character. The patient became restless and delirious, but remained conscious and vomited three or four times. Nothing noteworthy regarding the pupils, the urine, etc., was observed. Quinine and whisky were now administered, and at midnight, when the temperature was 103° F., the cavity was washed and swabbed out, the iodoform forming quite a coat. In twelve hours the temperature, which came down gradually, was normal, the pulse was 120 and fair, and the patient was quiet and sensible. This condition was maintained, the temperature remained normal, the pulse being 80 and good, and the respirations being 24.

**Carbolic Acid Poisoning by External Application.**—In a study of a case of carbolic acid poisoning, due to external application, J. A. Rauberheimer (Lancet, April 18, 1903) gave the following history of a child, aged six years, who was admitted to the hospital on March 4, 1903. She was suffering from genu valgum on both sides. Her general health was good, except that she had adenoids. On March 20 at 11 o'clock in the forenoon she was prepared for operation by a nurse. The process of preparation was as follows: (1) The parts were well scrubbed with warm water and soap; (2) all traces of soap and grease were removed by a thorough cleansing with methylated ether; and (3) the legs were wrapped up from the ankles to the groins in towels impregnated with carbolic acid, 1 to 40 (no acid had ever been applied to the patient before). Being nervous, the child cried vigorously while these preparations were taking place. At 12 o'clock she became quiet and drowsy. At 12.55 P.M., while being conveyed to the hospital for operation, she was still quiet, listless and drowsy. The condition was thought at the time to be due either to exhaustion from crying or possibly to the presence of the adenoids. At 1.05 P.M. the administration of chloroform was commenced. On examining the patient, she was apparently fast asleep, could not be made to speak, and took no notice of smart blows on the hand, and was quite unconscious. The pupils were dilated, the pulse was feeble and rapid and respiration was quiet. She was taken back to bed at once and immediately afterward was cyanosed and practically pulseless. On consultation, it was decided that the case was one of carbolic acid poisoning, due to external application. The carbolized towels were quickly removed and the parts were found to be very pale. A dram of whisky by the mouth every half hour until consciousness had been regained, drinks of hot tea frequently, a subcutaneous injection of five minims of ether, hot bottles to the extremities, and a mustard plaster on the precordia—were administered without delay. Some urine was drawn off, but no carboluria was present. At 3.30 P.M. the patient began to recover and to regain control over the bladder and rectum, which, before this, had been moved involuntarily. About 4 P.M. vomiting commenced, but nothing peculiar could be detected in the vomit. The patient now began to improve rapidly. At 5 P.M. another specimen of urine was obtained, which was found to be of a pale green color, gradually becoming darker on exposure to air and light. On chemical examination it responded to the usual tests for carboluria. All subsequent samples during the next twenty-four hours gave the same results, thus verifying the diagnosis. The patient recovered completely.

**The Etiology of Carcinoma of the Esophagus.**—An interesting contribution to this subject is made by P. Wolf (Münch. med. Woch., May 5, 1903), who reports two cases of carcinoma of the esophagus associated with a severe grade of spondylitis deformans. He discusses this condition as a possible etiological factor and assumes three explanations. It cannot, of course, be denied that the association may be entirely accidental. The probability that there is any etiological connection between these two conditions depends altogether on their continued association, and the author believes that in his own cases the anatomical deformity caused by the spondylitis served as a constant irritation during the act of swallowing. Such a continual irritation might here, as in other localities, serve as a predisposing cause to the formation of a cancerous growth. The third possibility, that the cancer was the primary, the spondylitis the secondary lesion, was not considered probable in the author's cases, as the spine exhibited lesions entirely remote from the site of the cancer, and these antedated the symptoms of the malignant growth. The chronic source of irritation affords a very plausible cause for the production of a malignant tumor in these instances.

**Tetanus.**—A study of 57 cases of this disease, which occurred in the Pennsylvania Hospital, Philadelphia, from 1874 to 1903, is published by G. W. Norris (Phil. Med. Jour., May 16, 1903). No cases were noted between the years 1886 and 1893—for which no explanation appears. The mortality was 84.2 per cent., death, contrary to the usual statement, occurring with almost equal frequency up to the eleventh day. The average specific gravity of the urine was 1.026, and it was usually high in the fatal cases. It is possible that this is due to the fact that on account of the fixation of the jaws, and the dysphagia, but small quantities of liquids can be imbibed. But this should call attention to the flushing of the system with water, which is a factor of treatment that has perhaps received too little attention. Death occurred in convulsions in 11 cases, in 12 cases from asthenia without convulsions. Seven patients were treated by the Bacelli method (carbolic acid given hypodermically to the limit of tolerance), with a mortality of 85 per cent. Tetanus antitoxin was only used in three cases with two deaths. The author has employed the symptomatic treatment in the larger number of cases, but does not recommend any definite drug, relying largely on the importance of local treatment and on prophylactic injections of antitoxin in suspected cases.

**Suture of the Great Sciatic Nerve.**—A case of this rare condition is reported by J. H. Dunn (Jour. Am. Med. Ass'n, May 16, 1903), as occurring in a youth who was struck by a scythe. The implement severed the muscles on the back of the thigh, and cut the sciatic nerve near the gluteal fold. Two days later operation was undertaken. The wound had become badly infected. The divided ends of the nerve were exposed, stretched and approximated with catgut sutures. The sheath was also sutured. The wound healed fairly well and about six weeks later improvement in sensation was noticed. A rubber muscle was then stretched from the toe of his shoe to a band below the knee, which he wore for eight months, at which time the improvement, both motor and sensory, was sufficient for him to resume work without wearing any artificial appliance. Four years later there was perfect restoration of function, except a decided paresis of the anterior tibial group of muscles. Sensation was slightly diminished along the outer side of the leg and foot. The only trophic disturbance was indicated by a small characteristic perforating ulcer of the heel, which had not improved for lack of proper care.

**Amputation under Cocaine Anesthesia.**—Another contribution to this subject is made by J. H. Gibbon (Phil. Med. Jour., May 2, 1903), who reports a case of painless amputation of the leg in a man of fifty years, who was suffering from far-advanced tuberculous disease of the ankle-joint and foot. The age and general condition precluded general anesthesia. Morphine, gr. ¼, and atropine, gr. 1/100, were given hypodermically fifteen minutes before the operation. The sciatic and anterior crural nerves were then exposed by the infiltration method of Schleich and injected with a one-per-cent. solution of cocaine. The operation was done without any pain or shock, at the middle third of the leg. The author calls particular attention to the infiltration for exposure of the nerves and insists that the solution be pure and fresh and the technic perfect.

## GENITO-URINARY AND SKIN DISEASES.

**A Case of Systemic Blastomycosis.**—The following résumé of a case of systemic blastomycosis, with multiple cutaneous and subcutaneous lesions, is given by O. S. Ormsby and H. M. Miller (Jour. of Cutan. Dis., March, 1903): (1) The first evidence of the illness which ended fatally in this case was in the lungs; (2) early general toxemia was present, as evidenced by fever, weakness, emaciation, etc.; (3) the cutaneous manifestations began two months after the initial illness, and were manifestly of internal origin, coming by way of the circulation; (4) these lesions comprised subcutaneous and cutaneous nodules and abscesses, open and discharging or crust-covered ulcers, and were extensively distributed, being as a rule smaller about the face and head and larger on the extremities. The trunk had comparatively few; (5) pure cultures of blastomycetes were obtained from the subcutaneous abscesses before death, and from various tissues and internal organs post mortem; (6) microscopical examination of both the internal and external lesions and the sputum failed to show any tubercle bacilli, but all showed enormous numbers of blastomycetes; (7) animal experiments were negative as to tuberculosis; (8) tuberculin reaction was negative; (9) post-mortem examination revealed: lungs riddled with miliary abscesses and tubercle-like lesions, the pleura studded with nodules, the liver extensively filled with miliary abscesses and tubercle-like nodules, the kidneys similarly affected but not so extensively, the spleen markedly involved, some portions being practically destroyed, the mesentery studded with the nodules. In all these situations blastomycetes were demonstrated microscopically and culturally, but tubercle bacilli were found in none; (10) the early lung involvement and other symptoms, the laryngitis, the microscopical appearance of the organs, and the patient's family history, all suggested tuberculosis; (11) the absence of the tubercle bacillus, culturally, microscopically, and experimentally, the negative tuberculin-reaction, the absence of the usual microscopic tuberculous architecture, the failure to reproduce tuberculosis in animals, the extraordinary number and rapid evolutions of the cutaneous lesions, and, lastly, the abundance of the blastomycetes in every lesion, ruled out tuberculosis.

**Etiology of Acne Vulgaris.**—The following results have been obtained in investigations into the cause of common acne by T. C. Gilchrist (Jour. of Cutan. Dis., March, 1903). Definite bacilli, named by him *Bacillus acnes,* were present in all smears from 240 tuberculous acne lesions, in 86 different patients. Pure cultures of this bacillus were obtained from 62 lesions (chiefly nodules), from 29 patients; 82 cultures were sterile. among which 70 were sterile because the proper media were not used. The remainder showed a growth of the *Bacillus acnes* mixed with the *Staphylococcus pyogenes* or *S. epidermis albus,* or the latter organism was in pure cultures. Sections of an excised comedo, of an early acne papule, or an acne pistule, and of five acne nodules, from six patients, demonstrated the stages of the disease. Sections of the nodules showed changes extending deep into the chorium surrounding in some instances a hypertrophied follicle. The lesion was made up of masses of cells, and plasma cells were numerous in some nodules, but not in others, in which their place was taken by lymphoid cells or by connective tissue cells. Many polymorphonuclear cells were also present, and were massed in some sections so as to form miliary abscesses. Phagocytes and pigment-cells were sometimes very numerous. Blood cells were numerous and dilated. In one section a large group of *Bacillus acnes* was situated deep in the chorium, beneath the follicle, but in most of the sections only a few small clumps or scattered bacilli were found. The *Bacillus acnes* is pathogenic in mice and in guinea-pigs. It is present as a short, thick bacillus in smears, but becomes thicker and longer in cultures. Among early cultures, it assumes a branching form. It grows when planted in masses on acid glycerine agar and forms a pultaceous, easily movable mass. By the clumping of this bacillus in the sera of patients affected with disease, it is to be inferred that the specific toxic body derived from the presence of the bacillus in the tissues is absorbed by the blood, resulting in the production of a specific glutenin.

**Inquiry into the Value of the Irrigation Method.**—The testimony offered both for and against the irrigation treatment of specific urethritis has been analyzed by Orville Horwitz (Proc. Phil. Co. Med. Soc., Feb. 28, 1903), from which he derives the following conclusions: (1) The irrigation method of treatment will not abort acute specific urethritis; (2) it will hasten the terminal stage which is difficult to cure; (3) chronic urethritis and involvement of the deep sexual organs are common consequences; (4) in many instances in order to effect a cure in the terminal stage of the disease, the irrigations must be discontinued and other methods of treatment employed; (5) irrigation should not be employed in the acute stage of specific urethritis; (6) irrigation of the deep urethra by means of hydrostatic pressure is injurious in the majority of cases of acute gonorrhea and is conducive to the development of complications; (7) little or no progress has been made in the treatment of acute urethritis either in aborting the disease, lessening its duration or preventing complications.

## HISTOLOGY, PATHOLOGY, AND BACTERIOLOGY.

**The Shiga Bacillus and Secondary Infections in Yellow Fever.**—In a case of yellow fever in which coffee-ground vomiting occurred, J. Guiteras (Rev. Med. Trop., April, 1903) obtained agglutination of the Shiga bacillus in twenty minutes, with dilutions of 1 to 50. The patient died on the fourteenth day of the disease, and continued to the end giving the Shiga reaction and showing hemorrhagic symptoms; hence the author thinks it possible that, the Shiga bacillus belonging to the hemorrhagic bacteria, secondary infection with this organism may be responsible for some of the symptoms of the disease, such as hemorrhage and remission of fever.

**New Method for Imbedding Tissues.**—A simple method for hardening and imbedding tissues for microscopical examination, is published by B. M. Bolton and D. L. Harris (Am. Med., May 28, 1903), which effects a great saving of time. The fresh tissues are placed in a hot two-per-cent. solution of agar-agar to which 10 per cent. of formalin has been added. The temperature of this fluid should be kept at about 70° C. After remaining in the solution for from one to several hours, the tissues are attached to blocks with a five-per-cent. solution of agar-agar containing 10 per cent. of formalin. The heat and the formalin harden and fix the tissues at the same time that the agar-agar impregnates them. The blocks are then placed in 95 per cent. alcohol for two to four hours and are ready for sectioning. The advantage over the celloidin method being that the aqueous solution of agar-agar at once penetrates the tissues, making preliminary dehydration unnecessary.

**Agglutination of the Blood Plates in Febrile Diseases.**—Attention was first called to a phenomenon occurring in blood specimens prior to coagulation, by Ducceschi; this consisting in the appearance in a healthy blood-specimen of minute whitish granules; which, upon microscopical examination, proved to be agglutinated blood plates. A. Zeri and M. Almagià (Policlin., April 4, 1903) have examined with special reference to this phenomenon, the blood of patients affected with pneumonia, pleurisy, typhoid, scarlet fever, measles, malaria and other diseases. Agglutination of the blood plates was seen in all save tertian and quartian malarial fever. Non-agglutination was observed in the afebrile as well as the febrile periods; and after the use of quinine in sufficient quantities to overcome the febrile seizures, agglutination reappeared. The authors believe that if further observations prove non-agglutination of the blood plates to be a constant characteristic of malarial affections, the phenomenon may be utilized in the rapid diagnosis of malarial blood. Ducceschi's technic was followed in the work of the writers who describe it as follows: A few drops from the punctured finger tip are allowed to fall upon a glass slide, the latter being tipped from side to side a time or two. Soon after, whitish granules may be seen in the specimen when it is held to the light. This is then fixed and stained with a one-per-cent. solution of methylene blue, and examined under the microscope, when the granules are seen to be made up of agglutinated blood plates.

**Autohemolysis from Alcohol.**—The case of an alcoholic patient in whom hemoglobinuria appeared repeatedly, upon the abrupt cessation of alcoholic indulgence and disappeared when its use was resumed, furnished the incentive for experimental work by S. Mircoli and A. Gervino (Gazz. Osped., April 12, 1903) undertaken with the view of inducing a repetition of the phenomenon in animals, and determining whether alcohol induced hemoglobinemia or at least a modification of hemolytic power. To this end rabbits were given large daily doses of alcohol for a period of three months; and at the end of that time the blood-serum was found to be of a decided red color; this condition of hemoglobinemia being considered by the authors as proof positive of hemolysis. It was further noted that such blood specimens were slow to coagulate and in two instances, in which hemoglobinemia was most marked, the blood failed to coagulate, even after three days. Hemoglobinuria was, however, not produced in the animals experimented upon; but marked urobilinuria appeared. This the authors account for upon the ground that the animals' kidneys had not yet lost the power to convert a large part of the blood-pigment into urobilin; while the patient's kidneys, injured by long years of abuse, failed in their power of transformation when the stimulus of the alcohol was withdrawn. Noteworthy is the fact that the rabbits' serum regained its normal limpidity within a month after the suspension of alcohol, and the coagulability of the blood returned. The authors liken the condition of the blood in these animals to that of immune blood; such phenomena coinciding, in their belief, with the quality of the serum and blood of tuberculous patients in good condition, who succeed in establishing a species of auto-immunization followed by spontaneous healing. In previous work, Gervino demonstrated a special resistance to tuberculous infection in animals fed with alcohol, and these experiments are believed by the authors to clear up the question of administration of alcohol in tuberculosis and place its use upon a scientific basis.

**Probable Nature and Life-Cycle of the Yellow Fever Germ.**—In the fact that the yellow fever germ requires two hosts for the completion of its life-cycle, *i.e.*, the body of a non-immune human being and a special variety of mosquito, Carlos Finlay (Rev. de Med. Tróp., April, 1903) finds an analogy to the malarial germ which suggests that the former, like the latter, is a protozoon and not a bacterium, and goes through phases of development similar to those of the malarial parasite. His study of the subject leads him to believe that the *Stegomyia fasciata* is the permanent host of the yellow fever parasite, while the human blood is the permanent host for the plasmodium. He states that it is positively known that the germ of yellow fever continues to live within the body of the *Stegomyia* at least two months; and it is probable that it there lives during the remainder of the infected mosquito's life. In closing this highly interesting paper, the author draws the following conclusions: (1) The yellow fever germ, being the parasite of a small insect, must be a much smaller protozoon than the malaria germ, which is a parasite of man. (2) The reality of invisible (ultra microscopical) germs as promoters of human infectious diseases having now been scientifically demonstrated (Annals de l'Institut Pasteur, Feb., 28, and March, 1903) it is possible that the germ of yellow fever may be one of that class. (3) For other infectious diseases, the germs of which have escaped detection, such as the eruptive fevers and syphilis, it may be surmised that these germs are, or at one time were, parasites of a very diminutive insect-host which either continues unsuspected or may have become extinct. (4) The sojurn of the yellow fever germ in the human body is of short duration, in accordance with its object, which is mainly to secure the preservation of the species by sexual reproduction. (5) The function of sexual reproduction of the germ in the human host is accompanied by the elaboration of powerful toxines to which must be directly attributed the attack of yellow fever. (6) Apart from the elimination or destruction of the *Stegomyia* and *Anopheles* mosquitoes, the main reliance for the prophylaxis of yellow fever and malaria should consist in preventing the transfer of the parasite from the intermediate to the permanent host, since by that means the extinction of the germ may be obtained; but while this is comparatively easy in the case of yellow fever, its accomplishment for malaria presents almost unsurmountable obstacles. There is no great difficulty in preventing a yellow fever patient (intermediate host) from being bitten by and infecting the healthy *Stegomyia* (permanent host), but, in a malarial locality, it is almost impossible to prevent the contaminated *Anopheles* (intermediate host) from biting and infecting some of the healthy persons (permanent host) in the locality. Serious efforts to prevent the transfer from the permanent host to the intermediate one, should of course never be omitted, but their efficacy as a means of stamping out the disease is infinitely less than the former instance. The reason of the difficulty in this case arises from the chronic if not life-long presence of the germ in the body of the permanent host so that control of the latter becomes practically impossible except by a general extermination or prolonged reclusion of such hosts. (7) If the existence of pathogenic bacteria requiring two hosts should be admissible in human pathology, leprosy and tuberculosis would be typical instances of the sojourn of the bacterial parasite in the body of its permanent host and in which the possibility of an intermediary host has hitherto been completely ignored or overlooked.

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## THE RISING IMPORTANCE OF PHYSICS IN MEDICINE.

NO SCIENCE is of more use in every-day life to the average man than physics is, for it serves him continually in all his years, whatever his occupation, as a rule by which he can best adapt material objects and physical forces to the purposes of his will. To know physics well and to be in the habit of practically applying it in the management of our bodies is to excel and to do so by being in a literal sense unconnected with stoical philosophy in harmony with Nature. For all men, surely, physics whether technical or in the form of the hereditary common wisdom of the race, is one of the most useful and hence one of the most valuable of the departments of present knowledge.

To medicine, the science of physics is rapidly becoming, with chemistry, the most indispensable of propedeutics. Chemistry has long been recognized as lying at the base of medicine but its sister science Physics is now taking its rightful place there, too. The pressing need is that it be given opportunity to still further explain vital functions at present obscure to the average medical student. This science is obviously at the basis of physiology, for physiological chemistry, once so large a part of physiology, now takes care of whatever organic processes are atomic. Physiology then when this separation has gone its limit will be practically biological physics. It will concern itself with molar movements and those described as molecular as distinguished from those which are atomic or chemic.

One needs only to look up and down the devious ways of a complex animal body such as man's to immediately appreciate that the more an intending student of medicine knows of physics the more easy and complete will be his understanding of vital processes and of their multiform derangements. The structure of the skeleton and the movements of its parts on one another are understandable only on the principles which physics explains. Exemplified in various complication in the joints are the three sorts of levers so familiar in mechanics. Without a complete knowledge of these complex leverages of bone and muscle such operations, *e.g.*, as those which Dr. Lorenz has recently demonstrated to us would be dangerous or even impossible, and orthopedics in general an uncertain and so relatively useless branch of medicine. Every surgeon, too, must understand the mechanical relations of the parts of muscles and of the muscles to the bones and viscera they serve. Obstetrical procedures of many sorts depend entirely on mechanical principles or on other departments of physics. The circulation of the blood exhibits numerous complex conditions of hydraulics especially, such as those of the structure and action of pumps, the more or less complicated principles concerned with flexible and elastic tubes, capillarity, elasticity of solids and fluids, friction, the pressure of liquids, the relative specific gravities of solids and the liquids in which they float, suction, siphonage, perhaps, and filtration and osmosis through membranes. The blood and the lymph and the functions of the lymphatic system involve besides these hydraulic relations, matters of color vision of spectroscopy and especially of the osmosis and diffusion of liquids which are of such almost universal occurrence in bodies made up of saline solutions separated by living animal membranes.

A due appreciation of the wonderful means by which the tissue-cells are aerated, respiration, requires thorough knowledge of pneumatics, including the diffusion of gases, Boyle's laws, partial pressures, vacuums, solution in liquids, and of elasticity of solids, levers, atmospheric pressure, osmosis, besides those concerned only with the circulation. The immensely complex events of digestion, absorption and assimilation included under the general term nutrition are really comprehensible in any degree adequate to medicine only with a real knowledge of several branches of physics, mechanics, hydraulics, and especially osmosis. The whole process of secretion with its innumerable varieties and modes, requires for its comprehension knowledge of the theory and practice of hydraulics, osmosis and diffusion and filtration. For the intimate understanding of the structure of muscle- and nerve-cells and of their action as developed by Mathews, one needs to know how salines and extractives, electrolytes, act on animal membranes and on each other by their ions. Electricity especially rapidly becomes a most indispensable object of knowledge to the professional man; its relations to medicine are continually more various. The modern laboratory course in physiology, an important portion now of every good medical curriculum, involves no little knowledge both theoretical and practical of galvanism, induced electricity, magnetism and of the electrical apparatus employed in the complicated experiments of class physiology. These instruments are often of no little complication; for example, the capillary electrometer, the inductorium batteries, the rheochord, and require for their intelligent use a far larger amount of the theory and practice of electricity than was ever demanded before of first-year students. This alone makes the need of more "entrance physics" imperative. Later on in the course and in practice afterward a technical knowledge of electricity and of electrical apparatus is indispensable for the proper and safe management of lamps, cauteries, centrifuges, Holtz machines, X-ray apparatus, etc. In the dental colleges still more electricity is required for various technical uses.

The development of the use of the Roentgen rays in diagnosis and in surgery, dermatology, etc., makes scientific information concerning them requisite for the physician who would be more than a mechanic, while the recent efforts to introduce the Becquerel (?) rays and the Finsen light make these new topics for physical study and information. In medicine as in every other department you experience, electricity is rapidly becoming in multiform aspects indispensable. No one can understand the ear and the process of hearing without a good knowledge of acoustics and much physics besides. To him who would know somewhat of the eye and of vision in form and in color with its multivarious complexities, optics and the theories of color and of space are entirely necessary. One sees in topics like the regulation of body temperature and the relations of weather to rheumatism large fields for the exploitation of any amount of physics. These all are but examples which show the complexity of an adequate physics of a living body,—but even these, selected out of the multitude, show this condition well. The highly evolved animal body is a living machine of a complexity and intricacy of structure and interworking as yet scarcely imagined; to explain it completely at last is largely the task of biological physics.

It is our present contention, then, that the amount of physics possessed by the average candidate in medicine is quite inadequate and that the requirements of this science for admission could be largely increased with great benefit to the usefulness of anatomy, physiology, surgery, obstetrics, pathology, orthopedics, otology, ophthalmology and electrotherapeutics at least. The time will come before long, with the inevitable lengthening of the medical course to six or seven years, when the relative importance of physics and of chemistry over, *e.g.*, Latin, will be realized by medical educators. Preparation must be kept in adjustment with the course for which it prepares, but at present the need of physics has far outrun the requirement in the subject in any medical college of the land.

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## THE SUBCLAVIAN TRIANGLE.

IT seems as though the details of regional anatomy, for surgical and medical purposes, should be fully known after all these years of investigation. Every now and then, however, a distinct contribution to our practical knowledge of some part of the body as regards its surgical relations shows that there are still many fruitful fields for observation, even in this supposedly worn-out subject. Prof. Waldeyer, the director of the First Anatomical Institute of Berlin, and one of the most skilful dissectors as well as perhaps the greatest of living anatomists, has been recently making observations at the base of the neck and is of the opinion that in spite of all the patient investigation of this region there are still some important elements of relational anatomy not definitely settled. His monograph on the Subclavian Triangle (Das Trigonum Subclaviæ, Waldeyer, Bonn, 1903) is dedicated, on the occasion of the twenty-fifth year of his professorship, to the professor of anatomy at the University of Pavia, where Waldeyer made some of his anatomical studies.

This subclavian, or, as it is sometimes called, vertebral triangle, whose base is the clavicle, or in its deeper layers the first rib, has for its apex the prominence of the sixth cervical vertebra, which can easily be seen and felt, and is such an important landmark in the neck. Because of the fact that the carotid can be compressed against it, it is sometimes spoken of as the carotid tubercle or the tubercle of Chassaignac, from the French anatomist and surgeon who first suggested its availability for this purpose. The triangle has for its sides the anterior scalenus muscle in front and the longus colli behind. It is easy to understand how many important structures occur in the spaces thus outlined. The most important feature of its relational anatomy is the fact that the apex of the lungs in full inspiration rises into its middle portion. When thus inflated, the lungs are more patent to investigation than in any other part of the body.

It is in this triangle anteriorly and posteriorly that the most careful physical diagnosis has to be made in suspected pulmonary tuberculosis. It is in this region, by a special peculiarity of the disease, that tuberculous lesions most frequently occur and investigation at or below the level of the clavicle may fail entirely to reveal what are serious though sharply localized apical conditions. Waldeyer calls special attention to the fact that this rise of the lungs high up into the subclavian triangle displaces many important structures, thus making the surgical relations of the space variable, with successive phases of the respiratory acts. The blood-vessels especially are displaced, and the veins here may easily be injured in operative procedure because of their constant change of location. On the left especially the so-called venous angle, at which the thoracic duct empties into the subclavian vein, may be displaced during deep inspiration, such as is likely to occur if the action of the anesthetic should be interrupted for a time and then resumed. As the thoracic duct not infrequently, as Waldeyer emphasizes, divides into several branches just before emptying into the vein the danger of wounding some part of the structure is increased.

In deep inspiration the apices of the lungs in the floor of this triangle are pressed closely against the skin, thus making them very approachable for diagnostic purposes. During expiration they retract noticeably, so that it is important for the diagnostician to make his judgment, so far as possible, on what is found at the height of inspiration. If this rule were always followed, there would be fewer complaints of the failure to find physical diagnostic signs in the lungs at a time when tubercle bacilli can be demonstrated in the sputum and the irregular pulse and temperature show the evident existence of tuberculous deposit. The subclavian triangle in its medical and surgical relations is thus seen to be one of the important regions of the body.

## NEW YORK'S KINDERGARTEN OF CRIME.

It is seldom that an enlightened commonwealth either deliberately, or through ignorance, trains a certain percentage of its citizens in the gentle art of crime, but such is the anomaly presented by the Empire State.

We do not for a moment believe that this is done intentionally, or wilfully, and have every reason to suppose that it is largely through ignorance of the conditions that the situation as now present in New York State is permitted to continue. Contributory to this there also exists a tendency which we have already had occasion to condemn among our politicians at Albany to deprive the lawful charges of the State of a just amount of care and support. This tendency has become manifest in the State control of the insane, where insufficient funds have been appropriated to carry on the necessary work in our large State hospitals.

It is, therefore, with deep regret not unmixed with indignation that we see in another department of the State charities like tendencies for political graft and similar inattention to the bare necessities for healthful physical and moral development.

The recent exposure by Jacob Riis of the frightful conditions that exist in the House of Refuge in Randall's Island, supplies us with the facts on which this indictment is based. Mr. Riis has found that there are 800 boys practically in one building at the House of Refuge. This is a State institution. The boys are sent there, as is well known, for small felonies and petty crimes, and are herded together as though they were all of the same moral type, practically no attention being paid to a proper moral classification. The result is that the few really vicious boys contaminate the many who are nothing more than wayward, and thus we have a veritable kindergarten in crime.

It has been known for many years that our State penal institutions, as at present administered, are, for the most part, very poor institutions for the reforming of criminals. The prisoners enter our institutions to be possessed of many more devils than they ever knew outside their walls.

The changes that have come about in the construction and management of our large institutions, being built on the cottage plan, with the consequent separation of the inmates into small family groups, is an indication of the commencement of common sense methods in the control of large classes of defectives, and similar classification should, we believe, be instituted in the handling of the boys that are sent to Randall's Island and, it may be, to the Elmira Reformatory.

The State pays large sums of money, New York City alone pays millions, to protect its citizens from the wayward, and vicious, and the criminal classes. The bill is enormous, and what do we get for it? Practically nothing, and yet we go on year after year maintaining institutions wherein crime shall be taught to the many that they may come out into the world to join the "powers that prey."

Another fault pointed out by Mr. Riis, and others who have investigated this institution, is that the inmates are not properly clothed. He very rightly remarks "If decent clothes are put on their backs, they are given a chance to respect themselves."

Thus one more glaring illustration of the present administration's incompetent and "economic" methods of taking care of the State's defectives is exposed to the public eye. We do not think that things have ever been much better in the past, but it is high time that there should be preparation for improvement in the future.

## ECHOES AND NEWS.

### NEW YORK.

**Antitoxin Scandals.**—The Health Office has unearthed, it believes, a scandal implicating a number of physicians in this city. It would appear from statements, as published in the daily press, that a number of physicians, particularly on the East side, are obtaining free antitoxin for use in diphtheria, and are charging the patients for antitoxin used.

**New Hospital Site.**—The Board of Estimate, at its meeting in the Mayor's office this week, held a long public hearing on the plan of the trustees of Bellevue and allied hospitals to acquire the block bounded by Twenty-eighth and Twenty-ninth streets, First avenue and the East river for a site for an extension of Bellevue. The assessed value of the land in the block is $846,000. A number of physicians spoke in favor of the plan, but the matter was finally referred to the Comptroller for further investigation.

**Appointments at Columbia.**—Drs. Clarence A. McWilliams, Forbes Hawkes, and W. B. Coley have been appointed Instructors in Surgery in the College of Physicians and Surgeons of Columbia University, New York. Dr. F. S. Meara has been appointed tutor in the department of Materia Medica and Therapeutics. Dr. Norman Ditman has been appointed assistant in the department of pathology. Dr. Philip Hanson Hiss has been made assistant professor in bacteriology. Dr. F. R. Bailey has succeeded Dr. Freeborn as Instructor in Histology, and Dr. A. N. Miller is appointed assistant in this department.

**Columbia Prizes and Awards.**—At the recent commencement the following medical prizes, awards and appointments were announced: Of the ten Harsen prizes the first, $500, went to Alfred Jerome Brown, A.B.; the second, $300, to Peter Irving, A.B.; the third, $200, to Isaac William Kingsbury, A.B. The other seven prizes of $25 each were awarded to James Pendleton Erskine, A.B., Herman Otto Mosenthal, A.B., Frederick Brown Humphreys, Ph.B., Royal Storrs Haynes, Ph.B., Hans Zinsser, A.B., Ward Slosson Gregory, Ph.B., and Jesse Godfrey M. Bullowa, A.B. The Harsen prizes for clinical reports—$150 to Alfred Jerome Brown, A.B.; $75 to Joseph Greif; $25 to Peter Irving, A.B. George W. Crile, M.D., got the Cartwright prize of $500.

Fellows—In anatomy, Edward Anthony Spitzka, M.D.; in pathology, Augustus B. Wadsworth, M.D.; in pathology and physiological chemistry, Edward Rudolph Posner, M.D. The Stevens triennial prize of $200—Divided between L. Pierce Clark, M.D., and Thomas P. Prout, M.D. The Alonzo Clark Scholarship, annual value $700, went to Charles Norris, M.D.

**Pathologist at Craig Colony.**—Dr. B. Onuf has been appointed resident pathologist at the Craig Colony for Epileptics at Sonyea, N. Y. Dr. Onuf is a graduate of Zurich, Switzerland. He acted for two years as assistant to Prof. Forel at the Insane Hospital Burghölzli at Zurich, afterward devoting eight months to the study of ophthalmology with Prof. Haab in Zurich. Later he located in Brooklyn, N. Y., where he began to devote himself to neurology. He was affiliated with Dr. Sachs' clinic in New York for a number of years, and later with the nervous clinic at Long Island College, where he gave clinical and didactic instruction to the students. He served as neurologist to St. Catherine's Hospital and consulting neurologist of the dispensary of the Jewish Hospital in Brooklyn. From 1896 to 1902 he was associate in pathology at the Pathological Institute of the New York State Hospitals. Among his scientific contributions may be mentioned a monograph written in conjunction with Dr. Joseph Collins, entitled "Experimental Researches on the Central Localization of the Sympathetic with a Critical Review of its Anatomy and Physiology." In selecting a pathologist for the Colony, the chief aim was to utilize the unusual opportunities given at the Colony for studying the causes of epilepsy. The work is to be not only pathological but also clinical, and it is from this combination that fruitful results are hoped.

### PHILADELPHIA.

**Children's Sanitarium Opened.**—The Sanitarium Association of Philadelphia began its twenty-sixth season at Red Bank, N. J., on June 6, when 2,000 children were given a free boat ride and a day's outing at that place. The authorities of the Bureau of Health, in seeking to bring about a lowered summer mortality among the children of the city, considered a proposition to erect tents in Fairmount Park for the care of sick children, but the sanitarium was thought to be the most desirable. The Philadelphia Red Cross Society has offered to furnish twenty-five nurses for work among sick children during the summer.

**Campaign of the Reorganized Philadelphia Health Board.**—According to the *Philadelphia Press* Dr. Abbott is preparing to make a rigorous investigation of the health conditions of Philadelphia, and purposes to conduct a thorough house-cleaning of the city from a sanitary point of view. The summer coming on, his first efforts are to be devoted to the reduction of infant mortality, although it is not known whether he purposes preparing a card catalogue of the children of Philadelphia, as is now being done in New York by Dr. Lederle. The matter of tuberculosis is to receive a thorough overhauling, and all cases are to be recorded throughout the city. Special investigations are in progress to determine the sources of contagion in milk, and unripe and decomposed vegetables will receive special attention. In this way he hopes to diminish the amount of typhoid fever, which he believes may be in part due to lack of precaution along these lines.

**A Preparatory Course for Trained Nurses.**—Largely through the efforts of Dr. S. Weir Mitchell a preparatory course for young women who intend becoming trained nurses has been organized at the Drexel Institute and will be inaugurated in September. The movement is the result of serious consideration by the recognized leaders of the nursing schools, who were advised in their work by Dr. Mitchell. The course will not be part of the nurses' hospital work. It is intended chiefly to familiarize the students with their prospective duties and make their first year at a hospital easier. The course will be divided into two terms, the first beginning in September, the second in February. In the earlier part lectures will be given upon anatomy and physiology. Then chemistry will be taught, applied chemistry and cooking. There will be lectures, too, upon drugs and domestic science and economics.

In the later term bacteriology, as much of it as it is necessary for a nurse to know, will be taught. After examinations the pupils will be awarded certificates. An interesting branch to be taught in the new school is that of reading. Correspondence, too, will be part of this latter branch. Physical culture is another thing to be taught.

The *Press*, in a commendatory editorial, has the following to say in regard to the new movement: "For much of the training given after entrance to a hospital these institutions are inadequately equipped. Hygiene, physiology, cooking, instruction in materia medica and in general branches of education are not easily taught or learned in the intervals of exhausting work in ward and sick room, where the practical side of nursing is acquired. Many nurses break down under this double strain. The work is often ill done. With every effort, it must be cramped, strained and hurried. The year which the Drexel offers will give the branches which can be learned outside of a hospital. For this work the Drexel is precisely fitted. Its chemical laboratory, its school of domestic science, its gymnasium and its work in general branches, physiology and hygiene give both the equipment and the instruction needed."

**The Calcium, Phosphorus and Nitrogen Metabolism in Acromegaly.**—Drs. D. L. Edsall and C. W. Miller presented a report upon this subject at the Philadelphia Pathological Society May 28. A study of two cases was made and in each instance there was found striking abnormalities in metabolism. One of the patients was given for a time a special diet, the calcium, phosphorus, and nitrogen intake was determined and a careful study made of the urinary secretion. This revealed a retention of all three elements but most marked in the case of nitrogen of which 20 per cent. was retained. The phosphorus and calcium retention amounted to twelve and nine per cent., respectively, of the intake. If there was simple overgrowth of the bones in this disease, one would naturally expect the calcium retention to be most marked. The findings simply emphasize the point that the disease is not confined to the bony structures of the organism. The overgrowth of the nervous system that accompanies the bone changes is in all probability abnormal in quality. In the cases studied it was also found that the relative amounts of calcium excreted by the kidney and bowel were greatly changed from those in normal persons. Instead of the amount secreted by the kidney being from one-eighth to one-tenth of that from the bowel, the former nearly equaled the latter. Experiment showed that this change in proportion was not dependent upon diet. It is a part of acromegaly when that disease is progressing and hence may be of some diagnostic or prognostic value. The experiments detailed point to the fact that in acromegaly there is a growth of abnormal bone instead of an abnormal growth of bone. The disease may be in the nature of a changed metabolism in general, the bone changes being merely a part of this general involvement.

**Aneurism of Aorta Rupturing Into the Esophagus.**—This interesting specimen was presented by Dr. M. H. Fussell. It was removed from an alcoholic patient who had died rather suddenly from severe hemorrhage after giving a history of occasional expectoration of blood. The bleeding was supposed to be due to dilated esophageal veins. Autopsy revealed a small aneurism of the aorta which had a slit-like opening from that vessel into a sort of false sac between the aorta and esophagus. The latter had eroded and finally broken down the wall of the esophagus, the opening into the latter structure being considerably larger than that in the aorta itself. The esophageal opening was partially occluded by a blood clot.

**Evolution of Scirrhous Carcinoma from Cystic Degeneration of the Mammary Gland.**—A specimen showing the above change was exhibited by Dr. A. G. Ellis. The gland had been removed from a woman aged sixty-three years. Chronic interstitial mastitis was present, though this was not a conspicuous feature of the specimen. Many of the lobules were the seat of cystic degeneration that had transformed them into a number of small cysts or, in certain instances, into a single large cavity lined by epithelial cells. Some parts of the specimen showed the presence of a typical scirrhus. The interesting feature of the section shown was that at several points in the wall of one of the large cavities the lining epithelium had broken through and was directly continuous with the adjacent masses of carcinoma cells. The specimen was considered to be confirmatory evidence of the view that cystic degeneration does undergo carcinomatous transformation. The opinions of a number of surgeons, both for and against this view, were cited. The writer is strongly inclined to class cystic degeneration among the so-called pre-cancerous manifestations.

## CHICAGO.

**Officers of the Physicians' Club.**—The Physicians' Club of Chicago held its annual business meeting and election of officers at the Sherman House June 1. The membership has increased materially and the finances are said to be satisfactory. The officers elected for the coming year are: Secretary, Dr. Henry F. Lewis; Directors for two years, Dr. Joseph Zeisler, Dr. A. M. Corwin, and Dr. A. R. Small. The other Directors are Drs. A. C. Cotton, J. Clarence Webster, and John M. Dodson.

**Hospital Investigation Ends.**—The investigation into the charges made by the nurses and internes of the Chicago Baptist Hospital several weeks ago came to an end yesterday, when the special committee named to look into the complaints submitted its report to the Hospital Directory. Mrs. Howes, head nurse, against whom the most emphatic protest was made, is found to be altogether blameless and her retention recommended. She announced, however, that she had already accepted a new position with an Eastern Hospital, and tendered her resignation. The report, which was adopted by the Board of Directors of the Hospital, says the nurses are not receiving the lectures which the members of the staff have agreed to give, and that the training school can be greatly improved by a reorganization in its government and teaching.

**Hospital Commencement.**—The Woman's Hospital of Chicago recently held the graduating exercises. Addresses were given by Mrs. McDowell, of the Chicago University Settlement, and Drs. Charles E. Paddock and Rachel Hickey Carr. Dr. Henry T. Byford presided.

**Resignation of Dr. Neely.**—Dr. John R. Neely has resigned his position as General Superintendent of the Dunning Institutions, and Dr. V. H. Podstata has been appointed in his place.

**Christian Hospital Enjoined.**—Charging the unauthorized use of his name as an inducement to attract the interest of physicians throughout the country, Dr. John B. Murphy has secured an injunction against the Christian Hospital, restraining the officers of the institution from representing him as a member of their staff, and from using a letter-head in which his picture appears. This was followed by the arrest by Federal officers of two of the promoters of the hospital on charges of misusing the mails. The men arrested are N. News or N. E. Wood, and Arthur C. Probert. They will have a hearing before Commissioner Humphrey in a few days, and in the meantime they have been released on bonds of $2,000. For several weeks physicians throughout the country have been receiving invitations to become members of the Christian Hospital staff. If they accepted, they were to pay from $15 to $25 for a certificate, which, it was pointed out in the circulars with the judicious exhibiting of the pocket membership card accompanying the document, "would bring more dollars annually than the cost of membership." A book, entitled "Case-Taking and Fee-Getting," was another bonus, and it was suggested the hospital would "split" the fees collected from patients sent in by the doctors who accepted membership, although this was to be "treated as confidential." The letter-heads on which this sort of invitation was sent broadcast contained the names of what was represented as the medical staff of the hospital, and at the top of the list was Dr. Murphy's name. An engraving picturing Dr. Murphy before a clinic graced the top of the page. Physicians from all points have written to Dr. Murphy about the affair. One letter, from Dallas, Texas, characterized the scheme put forward by the hospital as "the blue ribbon attempt to rob everybody and everything in sight." Inspector Stuart was appealed to, and Wood and Probert were arrested for fraud in misusing Dr. Murphy's name to obtain money. Judge Holdom was asked for the injunction against the hospital, and he issued the restraining order at once.

The Medicolegal Committee of the Chicago Medical Society has taken the matter up. On Monday, June 1, the Committee consulted their attorney, Mr. A. E. Dacy, of Pam, Calhoun & Glennon. They then saw Mr. Deneen, State's Attorney for Cook County and Inspector Stuart of the Post-office Department. Upon the advice of the Attorney, an injunction was issued restraining the Christian Hospital from using Dr. Murphy's name.

The history of St. Luke's Hospital, of Niles, Michigan, is doubtless familiar to many readers of the MEDICAL NEWS. That corporation was owned by Drs. Granville and Probert. The Medicolegal Committee of the Chicago Medical Society has in its possession proof that Probert has served a term in the Wisconsin Penitentiary. Granville has indulged in various whimsicalities. The Chicago *Record-Herald* for 1899 contains a telegram from New Carlisle, Indiana, announcing his arrest for bigamy, specifying five wives. It will be remembered that they made unwarranted use of the name of Dr. Nicholas Senn, of this city. In their dental department, they used the name of Dr. E. C. Kinsman, of Cambridge, Mass. That this was without authority is shown by affidavits, copies of which are in the possession of the committee. In 1901, Michigan became uncomfortable for this institution. In 1893, the Secretary of State incorporated the "Chicago Store" for general merchandise purposes. In 1901, this charter was purchased by Drs. Wood and others, and the name and purpose changed so as to allow of a hospital and dispensary. In 1903, the name was changed to "The Christian Hospital." It will be noticed that when St. Luke's faded in Michigan, in 1901, this one appeared here.

The reading matter and the general business policy of the institutions are identical. Nearly every name found on the Christian Hospital staff was a member of the St. Luke's staff, or has appeared in some connection with St. Luke's in the past. Even the most obtuse can see that the guiding spirit of the two institutions is the same.

The postal authorities have letters from at least six physicians stating that they purchased certificates by reason of Dr. Murphy's name. The committee urges every man, who has purchased a certificate with this understanding, to do his duty as a physician and as a citizen by writing Inspector Ketcham. The profession will be kept posted as to later developments. The Medicolegal Committee of the Chicago Medical Society consists of Drs. Wm. A. Evans, Harold N. Moyer, and C. S. Bacon. These gentlemen will leave no stone unturned to bring the guilty parties to account.

**Changes in Faculty in University of Illinois.**—Dr. Andrew McDermid has been elected associate professor of obstetrics; Dr. Frank B. Earle has been transferred from the chair of obstetrics to that of pediatrics, which he shares with Dr. W. S. Christopher, and clinical pediatrics; Dr. Charles S. Bacon has been elected professor of obstetrics; Dr. Maximilian Kuznik has been made adjunct professor of anatomy, and Dr. D. Lee Shaw, professor of clinical anatomy in the Medical Department of the University of Illinois.

**Graduation of a Large Class.**—The largest class ever graduated from the Medical Department of the University of Illinois received diplomas from the President of the University on May 26. Of the 230 graduates, 25 were women.

## GENERAL.

**Yellow Fever in Mexico.**—Yellow fever is prevalent in Mexico City and some foreigners have died at Yucatan.

**Centralblatt für allgemeine Pathologie.**—Prof. M. B. Schmidt, of Strassburg, will take the editorship of this journal, made vacant by the death of Prof. v. Kahlden.

**Hospital for Consumptives in West.**—Plans are on foot for the establishment of a hospital for consumptives, which will be located on a site on the boundary between Arizona and New Mexico. The hospital will care for those who are unable to pay their own expenses, and no charge will be made for service of any kind. Dr. J. C. Bancroft, formerly of Kansas City, is at work on the plans for the hospital. The plans include the making of the President of the United States Honorary President, with a Board of Directors composed of the Governors of all the States.

**Florence Nightingale in Her Old Age.**—Florence Nightingale, whose eighty-third birthday occurred last month, is spending her old age in Hampshire, England. She received her education in Germany, and the Empress Friedrich subsequently became one of the most ardent supporters of her ideas regarding woman's work in war time.

**Oldest Physician in France.**—Probably the oldest physician in France is Dr. David, who lives at Montpelier, aged 103 years. He has been seriously ill twice in his life; at seventy-three he had typhoid fever, at ninety-three pneumonia. He is an authority on diseases of the spleen.

**Report on the Bubonic Plague.**—The bubonic plague is increasing in India. The official British figures are as follows: In 1897 the death list was 56,000. In 1898 it was 118,000. In 1899 it was 135,000. In 1900 it dropped to 93,000. In 1901 it was 274,000, and in 1902 it was 577,000, making the deadly total for six years of 1,253,000 souls. But that is not all. During the three first months of the present year the total of deaths from the plague is 331,000, or more deaths in three months from that disease than there were in the entire year of 1901. At the present rate, the "black death" promises to reap a rich harvest this year. According to English accounts, the Yersin serum has proved to be worthless, but, according to French and German accounts, it was condemned by the British authorities in India without a trial.

**Removal of Chinatown.**—The State Board of Health, of California, recently passed resolutions recommending the removal of "Chinatown" from its present location in the heart of San Francisco. The board asserts that the presence of "a large alien and unassimilable population is a constant menace to the health, commerce and industries, not only of the city itself, but also of the State and even the nation at large." Just how the removal is to be effected has not yet been announced, but doubtless some way will be suggested. In Honolulu the Chinese quarter became unsanitary and otherwise objectionable, and very heroic measures were taken to cleanse the disease-breeding locality. It was purified with fire. Probably the torch could not safely be employed in ridding San Francisco of its pest-hole, but until the dozen blocks are absolutely obliterated and the ground which is now saturated with filth, be given liberal treatment with chloride of lime and carbolic acid, the quarter will require close watching. Work of the right sort has been done and is being prosecuted by the Federal, State and city health officers acting in harmony, and Chinatown is just now cleaner than it ever was before. That is saying a great deal, but the disinfection must be continued, in fact be constant, in order to render the quarter safe.

**The Opium Traffic.**—The *Evening Post*, with its usual good sense, editorially comments on this traffic as follows: "One more ground of national complacency has our Philippine adventure now compelled us to abandon. We are about to legalize the opium traffic in our new islands. Yet for two generations at least has England's complicity with the opium trade in India and China been the occasion of moral flings at her by Americans. Missionary meetings have alternately wept over her and denounced her; the implacable Anglophobe has always had one last resort—England's shame in seeking revenue from the victims of a baleful drug habit! Have we not all been called upon to thrill with indignation at the infamy of the 'opium war,' waged by a Christian nation in order to compel China to admit Indian opium? We would listen to no excuses. Talk not to us about fixed native habits. We were not to be caught by mumblings about regulating a vice which could not be suppressed. But, alas, our proud Imperialism has now forced us to swallow all those brave words. We are to sell the opium monopoly of the Philippines to the highest bidder, and expect to get $100,000 a year out of the deadly traffic. But we still go the English one better in the matter of hypocrisy, for we hasten to announce that we are going to devote the money to 'the work of education.' One part of that education might well consist in teaching the Filipinos from what a past we have fallen away."

**Once Again the "Fish" Theory of Leprosy.**—Dr. Jonathan Hutchinson writes another letter to the London *Times* to reassure the timid. All sound fish, fresh or cured, is, he says, perfectly wholesome. It is only after decomposition has set in that it is dangerous. Long ago he expressed the conviction that Roman Christianity, with its frequent fast days, was responsible for the presence of leprosy in Europe in the Middle Ages. History, he says, is repeating itself now in India. Wherever Roman Catholic missions are successful there is increase of leprosy. His figures indicate that a convert from Hinduism to Roman Catholicism incurs an enormously increased risk of becoming a leper. In most of the Indian asylums "native Christians" abound, of whom by far the larger proportion are Catholics. Conversion to any form of Christianity involves risk, because it removes the prejudice against animal food, but a creed which imposes the frequent use of fish is infinitely more dangerous. His calculation is that the risk to a Catholic convert is twentyfold that of one who remains in the Hindu faith, and in some cases ninetyfold. Respecting the Chota Nagpur district of Bengal, the census compiler writes: "The great center of Roman Catholic missionary enterprise in this province is Ranchi, where its converts exceed 54,000, or about three-fifths of the total number in the province. The increase during the last decennium was 15 per cent." Now it is in precisely this district, Dr. Hutchinson points out, that leprosy also has increased (from 4.5 to 5.8 per 10,000), while in all the adjacent districts it has diminished. He then writes: "The average incidence of leprosy in India as a whole is less than five per 10,000; but there are three local communities—Minicoy, Salsette Christian, and Kaligoan—in which it attains the frightful prevalence of 150, 50, and 500 per 10,000, and these are all places where the inhabitants live by fishing." All of which well illustrates the fact that theories like trouble can be easily found if one is looking for them.

**Health Officers in Council.**—The first annual conference of the State and National public health officers, for which a call was recently issued by Surgeon General Wyman, in accordance with the provisions of an act of Congress approved July 1, 1902, met at the New Willard Hotel last week. The boards of health of various States were represented. This being the first of these annual conferences the representation of twenty-one States and the District of Columbia was very gratifying to the surgeon general, who has taken a great personal interest in the success of the movement.

The conference was presided over by General Wyman, and after the meeting was called to order Assistant Secretary of the Treasury Armstrong, on behalf of the government, welcomed the delegates and assured them that everything would be done to make their stay as pleasant and profitable as possible. He said that in the great work of improving the health conditions of the country coöperation between the States and between the States and nation was the secret of success, and he promised in the name of the national government to do everything to further this end.

Surgeon General Wyman, in his opening address, outlined the purposes of the conference and what it is hoped it will accomplish. He said the great end in view was closer association and union of effort between State and national health authorities. He then briefly described the system and workings of the United States public health and marine hospital service and suggested a plan of organization by which the work of the national and State health administrations might be coordinated and made more effective.

Dr. Foster, of California, gave a description of quarantine operations in that State, particularly in relation to the plague danger in San Francisco. He said that with the vigorous cleaning out of Chinatown the fear of another attack of this disease was rapidly disappearing. He attributed the success achieved to the hearty coöperation existing between the city, State and national health officers in endeavoring to stamp out the infection. Dr. Foster was followed in interesting talks by Drs. Townsend, Porter, Egan, Conniff, Bailey, Souchon, Young, Fulton, Baker and Woodward.

At the suggestion of Dr. J. Y. Porter, of Florida, a telegram was addressed to the Florida legislature expressing the hope of the conference that the act now pending before that body providing for the collection of vital statistics would receive favorable action.

At the afternoon session the discussion of local health and quarantine conditions was continued, each representative explaining the sanitary laws and the method of carrying them out in his particular state, addresses being made by Drs. Wesbrook, Hunter, McAlester, Probst, Smith, Lee, Swarts, Simons, Tabor and Cooper.

The Conference adopted the following resolutions: *Whereas*, the Conference of the State Boards of Health of the United States with the Public Health and Marine Hospital Service, having confidence in the earnest efforts and ability of the Governor and State Board of Health of the State of California acting in harmony with the Bureau of Public Health and Marine Hospital Service to thoroughly eradicate bubonic plague heretofore existing in the City of San Francisco, do resolve that in the judgment of this Conference, so long as the present effective work is continued, there is no need for quarantine restrictions of travel or traffic to or from that State.

*Resolved*, that the methods of cooperation between national and State health authorities suggested by the presiding officer, meets the approval of the Conference.

A committee was also appointed to draft a resolution expressing regret at the death of Dr. Mathew Gardner, late President of the State Board of Health.

The various States were represented by the following delegates: California, Dr. N. K. Foster; Connecticut, Dr. J. H. Townsend; Delaware, Dr. E. W. Cooper and Dr. Alex. Lowber; Florida, Dr. J. Y. Porter; Illinois, Dr. J. A. Egan; Iowa, Dr. R. E. Conniff; Kentucky, Dr. William Bailey; Louisiana, Dr. Edmond Souchon; Maine, Dr. A. G. Young; Maryland, Dr. J. S. Fulton; Michigan, Dr. H. B. Baker; Minnesota, Dr. F. F. Wesbrook; Mississippi, Dr. J. F. Hunter; Missouri, Dr. A. W. McAlester; Ohio, Dr. C. O. Probst; Oregon, Dr. Andrew C. Smith; Pennsylvania, Dr. Benjamin Lee; Rhode Island, Dr. G. T. Swarts; South Carolina, Dr. T. Grange Simons; Texas, Dr. George R. Tabor; Utah, Dr. T. B. Beatty; West Virginia, Dr. Samuel F. Myers; District of Columbia, Dr. William C. Woodward.

**Against Use of Phosphorus.**—The international chemical congress at its session June 6 adopted a resolution favoring an international agreement prohibiting the use of phosphorus in making matches and requesting the international committee appointed at Paris in 1900 to communicate the resolution to the various cabinets.

**New Device for Providing Aseptic Thermometers.**—The Wood Coverette is the name of a new device for covering the bulb of a clinical thermometer. It is made of thin wood, rendered impervious to moisture and does not interfere with the registering. Its advantages are that a coverette can be slipped over the end of the thermometer before taking the temperature and then it may be burned up. The cheapness of the device and its efficiency render it a most desirable contrivance.

**Obituary.**—Dr. A. T. Tagert, president of the Kedzie Hospital in Chicago since its foundation three years ago, and one of the best known surgeons in the country, died this week of pneumonia in Chicago. He was fifty-seven years old and had been a practising physician for thirty years. He was a member of many medical societies.

## CORRESPONDENCE.

### TRANSACTIONS OF FOREIGN SOCIETIES.

### German.

CONGENITAL FUNCTIONAL DERANGEMENTS OF THE DIGESTIVE APPARATUS—CONGENITAL ATRESIA OF THE INTESTINES, CAUSED BY INTUSSUSCEPTION—FOREIGN BODY IN THE HEART—INFECTIOUSNESS OF GUMMA.

J. Knopf, at the Physicians' Society of Nürnberg, Feb. 5, 1903, read a paper on the subject of Congenital Functional Derangements of the Digestive Apparatus. In 1879 and 1885 Meier and Landerer published notes on the subject of pyloric stenosis, founded upon 31 autopsies. Knopf, however, does not regard the condition as necessarily congenital for the reason that out of the autopsy material used by the other two observers, only two cases were outside of the age-range of ten to twenty years. There is lacking proof whether, as a matter of fact, younger children and even infants may suffer from hypertrophy of the pylorus, and if this is true, whether the disease may be borne at all in the manner observed in individuals of greater age. Hirschsprung, in 1888, presented definite observations for the first time in medical literature of hypertrophy of the pylorus in nurslings. His results were confirmed later by Grau, Henschel, Finkelstein and Heubner. The interest possessed by this aberration of development has had, as one result, the discovery that the disease appears in children of other ages. The stenotic conditions, although they may be observed in nurslings, have the peculiarity that they do not appear immediately after birth, but rather after the lapse of a few months. The average shown in twenty cases was often between four and five months; up to this outcome the nutritional condition of the child had been satisfactory. Of these cases 61.53 per cent. died at the end of about forty days. If the conditions shown at the autopsy as to changes about the pylorus had existed since birth itself, it is likely that the symptoms thereof would also have dated from the same time. Since this is not the case, it is likely that some other factor has been added with the tendency of also inserting obstacles to the emptying of the stomach of its contents. One factor would supposedly be a catarrhal swelling of the mucous membrane of the stomach. The relation would thus be disturbed between the muscles of the stomach itself on one hand, and the pylorus itself on the other hand, followed finally by morbid contracture of the latter. In the autopsies the abnormal amount of pyloric muscle tissue has usually been assigned as the primary cause of the stenosis and as the anatomical basis for all the subsequent pathology and symptoms. This observation, however, has been questioned by the experiments and studies of Pfaundler. According to him it is not easy to draw direct comparisons between findings at autopsies and the conditions of the tissues during life. There are, as is known concerning the heart, both the systolic and diastolic conditions after death, and probably the arrangement of the pylorus may perfectly well be regarded as a persistent contracture of the muscles, brought about by fixation in the normal, functional phase of the stomach at the moment of death. On account of the results of these observations, Pfaundler is an opponent of surgical interference in these children. If there are marked clinical conditions which are to be explained only by the presence of the stenosis in this region of the stomach, he thinks that it is still possible by lavage and the local use of neurotic sedatives, hot baths and wrapping in hot blankets to overcome the difficulties. Similar observations have been made by Heubner, Kopven and Norden. This opposition against an operation which in its essence is life-saving, has really only its warrant in the premises that the anatomical basis of the trouble in children will usually disappear of itself. With this supposition, however, it is not possible to bring the clinical observations into unison in so far that both through palpation and through operation is it possible during life to appreciate the anatomical cause to be the masses of muscle about the pylorus, that usually are withholding the function of the stomach. The indication for an operation, which must necessarily be a laparotomy, lies in the presence of a tumor, of gastrectasia and of insufficiency of the stomach, but, after all, it rests upon great difficulties on account of the anatomical conditions of children. In such cases the clinical symptoms must be distinct and the dangers to life manifest. The good results of many operations attempted appear to warrant operative treatment.

**CHIARI**, at the Society of German Physicians in Prague, Feb. 20, 1903, presented a discussion on the subject of Congenital Atresia of the Intestines, caused by intussusception, which was, for the first time in medicine, discussed in 1888. Since that time three other cases have been observed of congenital atresia at the junction of the jejunum with the ileum, which, notwithstanding all care in the macroscopic examination, could not be distinguished from intussusceptions, so that the supposition was advanced that there had been an intra-uterine intussusception, which had healed of itself. Such would account for a great number of congenital atresias of the intestine. Braun has recently reported a case of congenital atresia, situated about 10 cm. above the ileocecal valve. In the distal portion of this atresia a microscopical examination showed conditions which pointed strongly toward there having previously existed a necrotic condition which probably depended upon an intussusception. With these findings Chiara agreed with the observations made in the three cases already alluded to, of which he made one microscopical examination. It was an atresia of the ileum 15 cm. above the ileocecal valve. A transverse section just below the point of stenosis proved that there had been an intussusception. The other cases, each about 4 cm. above the same valve, showed an obliteration of the ileum beneath the atresia, which was beyond doubt a remnant of a previous intussusception. Only in the third case was there a double atresia of the jejunum, one at the lower end of the jejunum, and the other about 34 cm. distal to this point was meconium recognizable with the microscope in the bowel. Nevertheless, a positive result in the cases reported by Braun shows the value of his observation.

**MAX KOCH**, at the Medical Society in Berlin, March 25, 1903, presented a case of foreign body in the heart, consisting of an iron pin sticking fast in the interventricular septum, and emerging free into the left ventricle. It was fixed in the septum and duly surrounded by fibrous connective tissue. During life it probably did not reach directly into the ventricle but remained among the trabeculæ, which had been bound by fibrous tissue in the neighborhood. The fact that the connective tissue was hard, and that there was nowhere any granulation tissue or cells which appear about foreign bodies recently in situ, showed that it was a very old process. In order to preserve the specimen, its position was not laid bare, but its presence was proved by the X-ray. Through this medium it was found that it was 3 cm. long, 1.75 mm. thick, an instrument blunt at the end, which projected into the ventricle, and was somewhat similar to the blade of an awl. The history was entirely negative, except that the man had formerly been a turner, and for several years had suffered from cough and expectoration, and since 1902 with palpation of the heart and shortness of breath. Clinically, he was shown to suffer from extensive arterial scleroses, systolic murmurs of the heart, and a very bad arhythmia. As to the manner in which this instrument entered the heart, the history was lacking. The autopsy itself failed to reveal a path from either the esophagus, the stomach or the surface of the body. The author was of the opinion that the pin had served as a projectile from some firearm, and quoted a Russian authority as to a similar observation.

**DELBANCO**, at the Biological Section of the Physician's Society in Hamburg, March 17, 1903, reported a case which illustrates the infectiousness of gumma. The patient was forty-six years old, and during his thirty-second year had acquired the primary lesion, and had been treated at a hospital in Hamburg for four weeks by inunctions. Since then he has been without symptoms and treatment. In July, 1902, after a long voyage on business he returned with a tumor of the penis, which did not prevent coitus. At the end of August his wife began to present symptoms, namely, roseola and papules about the genitals, and pustules on the face, anemia and headache. The husband, on the other hand, showed an ulcerating gumma where the tumor had been, namely, just at the meatus, and a second gumma which had developed at the penoscrotal juncture. The case, in the opinion of Delbanco, proved emphatically that the infection was caused through these gummata. Ulcerating papules or a primary lesion in the sense of reinfection are both to be ruled out. Similar cases have very rarely been reported in literature. In those furnished by Fournier in 1875, Landouzy in 1889, Ehlers in 1894, the gummata was situated similarly as in the present case. At the International Congress held in Paris, Feulard, in a contribution upon the persistence of the infectiousness of gummata, brought together a rather large number of cases where infection had followed 6, 8, 10 and 14 years after the primary lesion. Among these cases, however, only those of Fournier and Landouzy showed late syphilitic symptoms. With the exception of these cases, the infection of syphilis from the late cases is very rare. The possibility, however, of such results has been recognized by various authorities of high class, such as Jadassohn and others.

### CHEAP THERMOMETERS.

*To the Editor of the* MEDICAL NEWS:

DEAR SIR: In your issue of February 28 there appeared an editorial on the "Vice of Cheap Thermometers," which is very timely and interested me greatly. About two years ago I called the attention of one of our medical journals to the fact that the certificates, furnished with the cheap clinical thermometers, were absolutely worthless. By numerous comparisons of thermometers of different makes it was proven that about 20 per cent. of the number were near enough correct to be of any use for making temperature observations. The other 80 per cent. had errors varying from 0.5° to 2.5° F. The editor of the journal, to further make sure that such errors did exist, had the same thermometers tested by one of our scientific men, who found exactly the same errors, but for some reason the journal did not wish to take up the matter and publish it and prove my assertions to our medical profession correct.

I therefore beg to extend to you my thanks for the article in your issue of February 28, not only for proving my investigations in this field to be of value, but also for the good that will result to the poor suffering patients, who have been subjected to the evils of criminal and mercenary negligence.

Respectfully yours,

Philadelphia, June 6. A. F. WATCH.

## SOCIETY PROCEEDINGS.

### PHILADELPHIA OBSTETRICAL SOCIETY.

(Concluded from Page 1104.)

Dr. H. D. Beyea said that he would like to ask Dr. Hammond to what extent and how the water used in this operation was sterilized. In a plastic operation, cervix and perineum, performed by Dr. Penrose in a private house a few years ago, tetanus developed and resulted in death. The nurse in attendance, not accustomed to prepare for such an operation, it was found had not properly prepared the water. It had been taken from a well after a storm and was muddy. This was observed when it was too late to resterilize the water and therefore mercuric chloride was added. There semed to be no question of doubt but that the water was the source of infection in this case. Shortly afterward there occurred at the University Maternity two or three cases of tetanus with the same result. It was discovered that the water used for douching was taken from the tap and prepared by adding mercuric chloride. The infection here was positively traced to the water. It would seem to me that since the tetanus bacillus is so frequently found in water, that unless the water is sterilized by fractional sterilization, boiled for at least two hours on two consecutive days, or sterilized in the Sprague-Schuyler sterilizer under fifteen pounds pressure, we should look to the water as the probable source of infection. Aside from catgut, it is practically the only source of infection in abdominal technic.

Dr. B. C. Hirst remarked that the cases that occurred in the University Maternity were three in number and all due to the water of intrauterine douches, he feels sure. They had at that time a resident physician who conceived the idea that every woman's womb must be washed out after labor. Every unfortunate woman had an intra-uterine douche whether there were any complications or not, and three died of tetanus. We had the water examined after the first case, and in the sediment collected from the tap water there were demonstrated the bacilli of malignant edema and of tetanus. Animals injected with the bacilli died, some of malignant edema and some of tetanus. They had boiled the water, but immediately installed a Sprague-Schuyler sterilizer, the first, he believes, in the University Hospital.

It is a curious fact that the mistake should be made so often of mistaking tetanus for hysteria. He has seen three cases in which this mistake was made at different times, in different localities and each by a different consultant.

Dr. Hammond in closing the discussion, said he took advantage of the suggestion by Dr. Sailer as to the prevention of any subsequent cases of tetanus by first cleansing the entire institution with 1 to 500 bibichloride solution and liberated two tanks of oxygen in each room with the hope that pure air might contribute something toward preventing such condition. He neved had a case of tetanus before. In the same week there were four major operations in the same institution, and the water that was used was first filtered and then boiled 18 minutes. So, it seemed to him improbable that the infection was in the water. If so, they would have heard something more from it in the other cases, all of whom were prepared in precisely the same way both as regards the water and the instruments. The case directed itself so clearly toward the teeth as the focus that he has learned the lesson that whenever he has a patient from the country districts the first thing he expects to do, and for which he shall accuse himself of negligence if he does not do, is to inspect the teeth, having any carious teeth looked after before operation. In answer to Dr. Beyea's question, I can but repeat that it seems highly improbable that the germ was in the water. He does not think in this case that there was any possibility of mistaking the diagnosis for that of hysteria. Hysteria never entered his mind. The lectures he heard when a student so impressed him, especially in regard to the peculiar expression (risus sardonicus) that from the appearance of this in his patient he felt no doubt as to the diagnosis.

**Birth Palsies.**—Dr. M. H. Bochroch said that the obstetrician does not always take into consideration the accidents to the child which so frequently eventuate in serious and permanent palsies. These injuries are not always evident at birth; very frequently they do not receive attention until years after, and then at the hands of a neurologist whose function is usually limited to making the diagnosis of a permanent and hopeless lesion. Birth palsies occur more frequently in the practice of the general practitioner than in the hospitals and wards attended by professional obstetricians. In brain lesions, such as hemiplegias, microcephaly, parencephaly and hydrocephalus, forceps are as a rule used too late rather than too soon; that prolonged pressure such as occurs in primiparæ, is more often the cause of this deplorable state than the improper use of the forceps. In cases of cerebral hemiplegia or cerebral diplegia the most that can be accomplished is a tedious and only partially successful attempt at education, and some training of the paralyzed limbs. It would seem that if in every child in whom at birth there are present symptoms of asphyxiation following dystocia and in whom there has been prolonged pressure and constriction of the head, it would be a justifiable procedure to rapidly make an opening of moderate size upon either side of the parietal region; by such a procedure the effused blood escapes, or could be washed out with a normal salt solution. Erb's palsy is detailed, stress being laid upon the avoidance of the various procedures which predispose to this condition. The treatment of brachial palsy resolves itself into the employment of massage and electricity. The paralyzed arm should not be allowed to hang helplessly by the side, but should be supported in a sling or in a Velpeau bandage. In some of these cases nerve suturing may be indicated.

Dr. George M. Boyd in discussing the foregoing subject, said he had been fortunate enough not to meet with any of the palsies seen as the result of difficult forceps operation. He had never met with a case of brachial palsy. Bochroch speaks of prolonged labor superinducing the palsies rather than the labor assisted by forceps and interference. It seemed to Dr. Boyd that very many of the injuries that are met with, and possibly the greater number of asphyxias and fetal deaths, are due to too early interference, injudicious or faulty use of the forceps.

Dr. Stricker Coles said he had been so unfortunate as to have one case of palsy of the arm in difficult labor. The shoulders were very difficult to deliver and twenty minutes were used in making traction. He thought at one time he would not be able to deliver them at all. It was a typical case of palsy, as described by Dr. Bochroch. He heard occasionally from the child, and at one time it was said that she was at the Polyclinic Hospital where it was thought to make an X-ray picture, thinking the palsy was due to displacement. This was refused, and the last heard of the patient was that she had diphtheria and died.

The only other form he had known of is facial paralysis occipitoposterior delivery with forceps. The paralysis disappeared in five or six days and he had seen no bad results following the paralysis.

Dr. L. J. Hammond said he had been very much interested in the surgical treatment of peripheral nerve injuries and his feeling is that in this unfortunate condition they have a lesion justifying surgical treatment. As Dr. Bochroch has said, they have the condition due either to extravasation of blood from rupture of the venous plexus which surrounds the cord (extradurally), or we have inflammatory lymph deposited within the sheath itself. If this be correct it seems to me that we have in operation a relief that should be undertaken in cases that do not respond to the routine medical treatment within a reasonable period. If operation is delayed until nutritive changes take place it is probable that nothing can be done.

Dr. W. S. Stewart said that he would like to call the attention of the society to another form of palsy which they might find on investigation. He presumed that most of the members of this Society did not believe in maternal impressions. He had had in his experience a case resembling that described by the reader of the paper, but which he could trace back to maternal impressions. The child's left arm was paralyzed and hung at its side. The mother was disposed to accuse me of injuring it in her delivery. Professor D. Hayes Agnew was consulted and said that there was nothing to indicate that the child had been injured in delivery. Dr. Stewart inquired of the mother whether she had been disturbed in any manner by seeing a person with a similar condition. She at first said no. Then she replied, except that a man had sat opposite her at table who had no use of one arm. He told her he believed that to be the cause of the child's condition, and that it would be well to try electricity. He did not believe the condition would ever improve. That child, unfortunately, did not die, as in the case mentioned, and is living to-day with the same condition unhelped by various treatments and numerous doctors. He had another case which occurred with a woman sitting opposite a man who had a glass eye. When her child was born it had a corresponding sightless eye. In another case a pregnant mother gave birth to a child that had constant movements similar to chorea, and he learned that the mother, while carrying the child, was riding in a street car with a woman whose child was choreic. He could give you many other cases, without doubt results of maternal impressions. While this Society may not feel much interest in this subject, he thinks it is often well to trace back such occurrences to their true source.

Dr. E. P. Bernardy said there is no doubt that a prolonged labor can cause serious brain lesions to the new-born child, the excessive overlapping of the parietal bones causing rupture of the blood vessels and injuring the delicate coverings of the brain, but the true cause of many brain lesions, especially those of late appearance, are caused mostly by the injuries caused by misapplied forceps. While the forceps are all for saving, both to mother and child, it is a well-known fact that they can become the reverse. In an experience of nearly five thousand confinements, he can hardly recall a case injured by a prolonged labor, where forceps were not applied. In his earlier obstetrical practice the application of forceps was one in about five cases. At the present it is one in about fifty or a hundred confinements. In an article which he published on the Use and Abuse of the Obstetrical Forceps, the statistics showed that in America the forceps was applied in every fifteen confinements, therefore he cannot believe that these injuries are produced from lack of the use of the forceps.

Dr. F. C. Hammond said regarding Duchenne's paralysis, the experiments of Stolper conclusively prove that the plexus cannot be compressed by the tips of the forceps so long as the child presents by the vertex, although it may occur in face and brow presentations. Dr. F. X. Dercum states that he has never seen a case of palsy cerebral in origin occur in a multipara. From the standpoint of prophylaxis it would be well to apply forceps, just so soon as the fetal head fails to recede between pains.

Dr. Bochroch, in closing the discussion, said regarding F. C. Hammond's remarks, that he could not go into the details concerning in what particular presentation the forceps do the most damage. It is well to remember Erb's point high up on the neck, the site of the origin of brachial palsy, and that if the forceps lay over too far palsies may be made in that way. In some literature it is shown that the sole cause of palsies is that the forceps are put on in a bungling fashion, pressing on Erb's point. It is a very curious fact that facial palsies usually disappear in two or three days. He mentioned in his paper that nerve suturing might be resorted to. He is not familiar with a case in which it has been done. Nerve suturing is receiving considerable attention from the surgeons and they will have to decide the question of the utility of this operation. Recent reports by Kennedy are reassuring.

He thinks Dr. Bernardy did not understand how he tried to make clear that it was the want of proper use of the forceps rather than the early use which caused injuries. The fact that the forceps are not used early enough and prolonged pressure permitted, especially in primiparæ, is, he thinks, the frequent cause of the palsies encountered.

## NEW YORK PATHOLOGICAL SOCIETY.

*Stated Meeting, April 8, 1903.*

James Ewing, M.D., in the Chair.

**Quantitative Estimation of Albumin in the Urine.**—Dr. N. E. Ditman read a preliminary report on this subject, giving especial attention to the method of Wassilyew. The MEDICAL NEWS will publish this paper in detail later.

Dr. F. C. Wood said that he thought the method which Dr. Ditman had just described promised to be an excellent one. Wassilyew's paper had been practically buried in the Russian journals and the method had never been much used. The whole technic, however, was so simple and the results so accurate that he thought it an excellent clinical method for the determination of albumin. No care was required in neutralizing the urine and in two or three minutes a determination could be obtained. Dr. Ditman would pursue the matter further, especially with the urines containing higher albumoses in order to see how much these albumoses influence the reactions, the tabulated results showing only globulins and albumins.

Dr. Harlow Brooks said that the case which he had originally reported had followed very closely the course described by Dr. Satterlee. His case, however, had died, and at autopsy the changes in the liver had been found to be very extreme, almost to be compared with the changes in acute atrophy. He thought that the disease was very badly named, since the name would imply that the disease was a definite and specific one. Although there was a great similarity in the cases spoken of by Dr. Satterlee, by no means all cases showed the same bacteria. Dr. Brooks believed that almost any bacteria were capable of producing the changes. He had noticed that there were very few cases of Weil's disease reported in American literature, probably due to the fact that there were a great many cases of acute jaundice with albuminuria and presumably with bacteriuria which were not reported at all. He had himself recently seen a case which had followed the eating of large quantities of lobster salad. Such cases usually followed the eating of contaminated meats. The more recent work on the disease had tended to confirm the idea that it was not a specific disease and was not caused by a specific bacillus; but that it might be caused by a large group of bacteria. The cases were apt to have relapses. In regard to Dr. Satterlee's having been unable to reproduce the jaundice in the experimental animals, Dr. Brooks said that he had been himself unable to do so. He thought this might be due to the fact that jaundice was rare in the animals used for experiments. He had never seen it himself, nor had he ever seen it reported.

Dr. W. H. Park asked Dr. Satterlee exactly what connection he believed to exist between the bacteria, the lesions causing the acute jaundice and the bacteriuria. Did he think the bacteria, which through their toxins excited the lesions in the region of the liver passed by the blood to the kidneys; or had there not probably been either an increase in a previous latent infection of some part of the urinary tract or the starting up of an independent infection through the influence on the body resistance of the infection causing the jaundice?

Dr. Satterlee said that so far as he could see there had been no previous disease of the kidneys. He could not say positively that there had not been bacteria there before, but he had examined the urine frequently and it had showed no signs of bacteriuria.

Dr. Park said that in this case the urine seemed to be a suitable soil for the growth of the bacteria found, since they continued present for many months after all symptoms had abated and might therefore have been present in small numbers before without having produced any noticeable changes in the urine.

**A Case of Bilharzia Hematobia.**—Dr. Eugene H. Pool presented a case of bilharzia hematobia, the interest of which, he said, was due, in the first place, to the infrequency with which the trouble was seen in this part of the world, and, secondly, to the interesting phenomenon which might be noted under the microscope; namely, the development of the embryo from the ovum. The patient was a young man, twenty years of age, an Algerian by birth, a sailor by occupation. When he was eight years of age he went to Ismailia on the Suez Canal, Egypt, and remained there for five years. During that time he went in swimming almost daily, both in the Suez itself, and in the neighboring streams and ponds; and he also drank the unfiltered water from the ponds. The next five years had been spent on a Greek ship in the Mediterranean. He had left this vessel two years ago at Marseilles, and there he contracted gonorrhea four days after intercourse. He had had with that attack very little pain and frequency of micturition, but had had a characteristic discharge which disappeared at the end of fifteen days under urethral injections. A fortnight later he went back to Algiers, where it was intensely hot, and shortly after reaching the country, as he supposed, on account of the intense heat, he noticed that all of his urine was diffusely red. He remained in Algiers for three or four months and the condition persisted. He had no other symptoms and was able to go about his regular occupations. As soon as he left the country the diffusely bloody urine changed to the characteristic hematuria of the disease, viz., after he had passed a normal amount of a fairly normal looking amber-colored urine and when the bladder was apparently empty, with an involuntary spasm there was discharged a dram or two of a thin bloody fluid. This condition had persisted up to the present time, intermittently. The man spent nine months in Cuba, and for the last six months had been in the United States. At the present time he also complained of indefinite pain in the loins and of a feeling of weakness which prevented him from doing any hard work. Physical examination showed a well-nourished young man. Examination of heart, lungs, abdomen, rectum, etc., was negative. The following was the report of the examination of urine: April 8, volume voided in twenty-four hours, 1,950 c.c.; reaction, acid; color, amber; sediment, moderate in amount, reddish white; sp. gr., 1,019; albumin, trace; sugar, negative; urea, 41,301 grams in 24 hours; indican, no excess; acetone, negative; chloride, 13.6 grams in 24 hours; phosphates, no excess. Examination of sediment obtained by centrifuge showed; blood, very small amount; pus, small amount; mucus, small amount; extremely few hyaline casts; numerous squamous epithelial cells; many ova of the bilharzia; and numerous structureless threads.

Examination of Blood.—Red cells, 3,340,000; hemoglobin, 86 per cent.; leucocytes, 6,600. Differential count: small lymphocytes, 31.5 per cent.; large lymphocytes, 6.5 per cent.; polymorphonuclear neutrophiles, 52.5 per cent.; eosinophiles, 9 5 per cent.

Dr. Pool also exhibited three photomicrographs; the first showed the ovum consisting of shell inclosing the embryo; the second showed the egg shell from which the embryo had migrated; and the third, the embryo after its exit from the shell. Under the microscope were shown specimens of the patient's urine containing the ova; and also diluted urine in which the development of embryos from ova was in progress.

**A Simple Method of Obtaining Blood from the Rabbit.**—Dr. Augustus Wadsworth demonstrated a simple method which he used for obtaining blood from the rabbit. He said that although he had usually had little difficulty in bleeding rabbits, there were animals, especially those anemic or emaciated, which bled with great difficulty from the ear veins, yielding only a few drops at the most. His experience in bleeding rabbits had brought out the fact that there was less difficulty in summer than in winter, and on warm than on cold days, and when the animal was tilted head downward. He had therefore adopted the method of warming and tilting his animals, which brought the blood into the peripheral circulation and distended the ear veins. Anemic and emaciated animals which had proved refractory yielded under these conditions sufficient blood (five c.c. or more) for most purposes. After having tried various methods of warming his animals, Dr. Wadsworth had finally adopted the plan of putting them on a hot-water bed. An ordinary commercial rubber bag, 16 inches square, was partially filled with hot water and placed cornerwise on an animal tray. The animal, placed on the bag, was tied by its legs to the angles of the tray, and a blanket wrapped around the bag and animal increased the surface in contact with the water bag and kept in the heat. The rabbit was then ready to be tilted. A board longer than the tray, with a support behind by means of which the angle might be varied, and in front two right angle hooks screwed about six inches from the bottom of the board to hold the tray, served this purpose very well. The ear, previously shaved and sterilized with carbolic solution and alcohol, hung down below the tray and a longitudinal incision was easily made with a sharp knife in the distended marginal vein. A transverse incision was to be avoided, as it often allowed the vein to retract in its sheath and might sever the artery which accompanies the vein. A dull knife or a clumsy incision was apt to injure the walls of the vessels, so that clotting took place in the lumen of the vessels more quickly than if a clean incision were made. With this method 20 c.c., or even more, of blood might easily be drawn at one time.

Dr. James Ewing asked Dr. Wadsworth whether he had tried this method on guinea-pigs.

Dr. Wadsworth said he had not.

**A Convenient Method for Growing and Storing Virulent Pneumococci.**—Dr. Augustus Wadsworth called attention to the difficulty of keeping pneumococci alive and virulent for any length of time by ordinary culture methods. Any method which would do this would obviously be of great service to any one conducting a long series of experiments with this organism. Other observers had suggested various special media with which this might be accomplished. Washbourn and Eyre had used agar smeared with rabbit's blood and had found their organism alive after some months. Although Dr. Wadsworth had not made an extended study as to how long the pneumococcus might in exceptional instances remain alive and virulent under these conditions, he had frequently found such tubes sterile after a few weeks and, therefore, could not rely on this method. Bezançon and Griffon had suggested the serum of young rabbits as a favorable medium for growing and raising the virulence of the pneumococcus, but for the preservation of living cultures they had recommended the serum of older rabbits. Guarnieri had suggested a nutrient peptone meat infusion medium containing 4 per cent. gelatin and .3 per cent. to .4 per cent. agar; but the virulence was maintained for only five to fourteen days and the cultures were not viable for much longer periods. Dr. Wadsworth then described a medium which in his experience had given more certain and better results than any he had as yet tried. He had chanced, while sterilizing ascetic or pleuritic sera at low temperatures (60° to 70° C.), to obtain in one instance a soft jelly-like consistence of the serum, which still retained its original transparency. Being unable to obtain this a second time with other sera, he then tried adding small quantities of agar (.3 per cent.) to the ordinary fluid serum, and found this made a very good substitute for the transparent semifluid serum. The serum to be used for this medium was drawn by sterile apparatus into sterile flasks and tubed as soon as possible. This was done to avoid the usual intermittent sterilization at low temperatures which often clouded the serum and could not be relied upon to destroy the spores of some contaminating organisms, the spores often failing to develop into vegetative forms in the undiluted serum. A dilution of the tubed serum with ordinary nutrient peptone agar in the proportion of about one part of agar to five of serum gave a semifluid medium which served all practical purposes. Dr. Wadsworth said it was well to avoid using media containing glucose or other sugar which might be fermented by the pneumococcus, as rapid death and degeneration of the cells took place in such media. He had found cultures of pneumococcus in glucose broth dead after three days' incubation. Compared with the ordinary agar or serum agar tubes the advantages were obvious and numerous:—there was practically no environmental change from that found in the body fluids of the animal; the growth was less compact; the products diffused more rapidly; and finally, subcultures were easily made with the platinum loop or with capillary pipettes by means of which colonies may be transferred from any part of the tube to fresh media. In the semifluid serum the pneumococcus always grew luxuriantly along the puncture, forming colonies of considerable size, if allowed to reach its maximum growth. Microscopical preparations from such cultures showed less degeneration of the cells than on ordinary media. Furthermore, capsules were formed and were readily demonstrated by the use of gentian violet and washing with 20 per cent. copper sulphate, as recommended by Hiss (*Centralblat f. Bakt.*, 1902, Bd. XXXI, p. 302). Cultures incubated for twenty-four hours or less and placed in the ice box at from 8° to 10° C., had been found to be alive and virulent for eight or more months in the pure serum medium, and three or more months in the serum agar substitute medium. The virulence of the pneumococcus had not been accurately determined but the results of animal inoculations had been compared at an interval of three months in the case of the growth in the serum agar tubes and had failed to show any appreciable loss of virulence in one c.c. doses. Peptone broth subcultures from an agar serum tube stored for three months in the ice-box, in doses of one c.c. had killed by intrathoracic inoculations a medium-sized rabbit in about eighteen hours with the usual local and general lesions of pneumococcus infection. In view of the recent researches on bacteriolysis, and more particularly those of Walker on the increase in virulence of microorganisms when grown in the sera of specifically immunized animals, such a medium as he had shown, Dr. Wadsworth thought, might become of considerable practical service, if only the blood serum of the immunized animal be substituted for the ascitic or pleuritic fluids he had used. The organisms might thus be kept in the sera of any animal for which it had become adapted for a number of weeks with but little biological change.

Dr. W. H. Park asked Dr. Wadsworth whether he thought that the bacteria would live longer in a medium so prepared than they would if it contained more agar. He had himself used .7 per cent. agar.

Dr. Wadsworth said he thought that the advantages of having the medium as fluid as possible were that one could get at the colonies more easily, and that it allowed growth to spread out into the medium. On pure theory he thought that if the products of the organisms were allowed to diffuse through the media, the organisms might perhaps retain their viability and virulence longer than on solid media; but he did not know what the results of experiments would show in regard to this. He thought the pure serum was preferable to the agar serum. In other tubes of pure unheated fluid serum which were kept some time and had evaporated to a semifluid consistency, the pneumococcus apparently remained alive and virulent for a considerable time as in the other tubes, though accurate observations had not been recorded. He did not know just how long the virulence might be sustained in these tubes. The less dilution the better.

**Differential Leucocyte Count in the Early Days of Typhoid Fever.**—Dr. Henry A. Higley of Brooklyn, New York, read a paper on this subject. After a brief review of the work done in this line by Thayer and others, he gave the results of a series of observations made during a period of two years. His results varied quite markedly from those of Thayer for the first week, and he found that in many instances there was a differential count characteristic of typhoid present during the first week of the disease. The differential counts were made from two coverglass preparations, one stained by Ehrlich's triacid stain, and the other by either Jenner's or Wright's stain. One thousand leucocytes were counted with each stain; that is, 2,000 from each patient. Sixteen cases were stained and given in detail. The counts were made during the first week, and the fact that the roseola appears on the seventh to the tenth day was used to determine the first day of the disease, the counts being made at least three days before the appearance of the eruption. The first nine of the cases gave the following average percentages: Small mononuclears, 17.8 per cent.; large mononuclears, 21.1 per cent.; polymorphonuclear neutrophiles, 59.4 per cent; eosinophiles, 1.7 per cent.

The remaining seven of the cases from a consideration of the history and the clinical symptoms were believed to have been within the first week when the leucocyte counts were made; but the writer could not demonstrate beyond a reasonable doubt that such was the case. Hence, they were not used in computing the averages. Comparing the averages obtained with those given by Thayer for the first week of the disease, Dr. Higley found the number of polymorphonuclear neutrophiles much lower (14.6 per cent.), and that of the large mononuclears much higher (8.7 per cent.). The small mononuclears and eosinophiles also showed somewhat higher figures. Other acute diseases which usually show a normal total leucocyte count or a total hypoleucocytosis and which so far as a total count is concerned are to be differentiated from typhoid, are measles, influenza, pure tubercular infection and malaria. Counts in 16 cases of malaria were given and it was found that in many instances the differential count so closely simulated that found in many cases of typhoid during the first week that a separation was impossible; but as a rule the malaria cases show a much lower relative number of eosinophiles than do the typhoid cases. Dr. Higley's conclusions were as follows: (1) Many cases of typhoid fever contrary to general supposition show the characteristic differential leucocyte count within the first week of the disease. (2) The definite value of the differential leucocyte count in the early diagnosis of typhoid fever is as yet problematical, but it seems certain that when used in addition to the total leucocyte count, more information may be obtained than by employing the total count alone.

## NEW YORK ACADEMY OF MEDICINE.

### Section on Orthopedic Surgery.

*Stated Meeting of March 20, 1903.*

T. Halsted Myers, M.D., in the Chair.

Dr. W. R. Townsend presented the following patients:

*Case I.*—Female child, sixteen months of age, with a marked rotary lateral curvature to the right of the dorsal region. The mother noticed a well-marked deformity when the child was between three and four months of age, and says it has not increased rapidly. The child is well nourished and presents symptoms of rachitis—enlarged abdomen, fontanelle not perfectly closed—enlarged epiphyses and rachitic rosary.

Dr. Townsend showed a frame which is used at the Forty-second Street Hospital to keep these cases in a recumbent position, as the children are too young to permit of much being done in the way of exercise or manipulation, and the mothers cannot handle them conveniently in plaster of Paris jackets which soon become soiled.

*Case II.*—A boy, aged eight years, who was shown to the Section when he was two years old. At that time there was present a poliomyelitis of the muscles of the abdomen and body causing a well-marked lateral curvature to the right, as he was unable to maintain the erect position. He was under treatment ever since and has been kept flat on back. Has been given massage and passive movements in an endeavor to develop the muscles, and for past six years has worn a plaster of Paris corset. His spine is nearly straight, and is held so largely by the shape of his ribs. The power of the abdominal muscles—the recti, external and internal oblique and transversalis, has never been regained. The chest is flat and the right scapula projects very markedly. This case is interesting, as it has been followed up for a series of years. He has never had pneumonia, pleurisy or any other disease.

*Case III.*—A girl, aged ten years, with general rachitic deformities—lateral curvature to the right in the dorsal spine, bow legs, curvature of femur, anterior curvature of tibias—coxa veracubitus varus. Supracondylar osteotomies have been performed, and the bow legs have been corrected. For the spinal curvature solid plaster jackets have been applied and the curve is less marked to-day than it was when first seen several years ago. Reference was made to an article by Dr. Hoffman, of St. Louis, showing the normal position of the arms. The cubitus varus in this individual was very plainly shown by contrast. Dr. Hoffman has done a wedge-shaped osteotomy on the lower end of the humerus, and it might be done in this case.

*Case IV.*—A girl, nineteen years of age, with lower dorsal Pott's disease of one year's duration. The kyphosis is well-marked, and curvature of the spine in the affected region to the right. This case illustrates the fact that medical knowledge is needed in the application of muscular exercises for the correction of curvature of the spine. Had exercises been insisted upon instead of the application of the plaster jacket, an immense amount of harm would have been done. The treatment for Pott's disease is absolutely different from that of lateral curvature, and it is important that the difference in diagnosis be recognized.

Dr. Whitman presented these cases of typhoid spine:

*Case I.*—This case was treated last August in the Presbyterian Hospital for typhoid fever. The fever ran the usual course, and the patient was discharged in September as cured. It was supposed that on October 15 he fell and hurt himself. He had pain in the spine, well-marked posterior curvature and rigidity of the lumbar region. Could hardly walk. Was at the Hospital for the Ruptured and Crippled for three weeks, and was told then that he had Pott's disease, early stage. Diagnosis of typhoid condition was made later. A plaster of Paris jacket was applied, worn three months and cure resulted. Of sixty or seventy of these typhoid spine cases, only six have occurred in childhood.

*Case II.*—This is a case of combined tendon transplantation and arthrodesis following anterior poliomyelitis. The tendon of the proprius hallucis is inserted through a hole bored in the scaphoid bone. Then arthrodesis is performed at the astragaloscaphoid point to make the effect more permanent. The operation was done last September. There is a good dorsiflexion. In many of these cases the toe cannot be raised. Here it can be.

*Case III.*—On July 21, 1901, this patient came to the hospital with osteomyelitis involving the knee-joint—almost rectangular flexion. Forcible correction was performed. There is now a much more useful amount of motion 10 degrees from 170 degrees to 160 degrees than before the operation was performed, when there was complete anchylosis. If found impossible to completely extend the limb, it is well to supplement the operation by osteotomy. In these cases there is a slight tendency toward flexion, which must be resisted by massage. These tendons have been divided, yet the patient has good power of flexion.

Dr. Homer Gibney presented a case of congenital lateral curvature. Nothing in the way of treatment had ever been done. The mother thinks it has grown less as the child has grown.

Dr. Virgil Gibney presented a case illustrating the difficulty of making a differential diagnosis between lumbar Pott's and osteosarcoma of the spine. In 1900, the patient presented signs of lumbar Pott's. Jackets were applied and gave relief and perfect fixation, but persistent and acute pain on the slightest provocation remained. There was loss of power in the limbs and disinclination to walk or move about. These symptoms persisted for a year. In 1901, symmetrical abscesses on either side of the spinous processes were noted. Aspiration was resorted to with negative results. The surgeon in charge declined to do laminectomy. Early in 1902 he was seen again. He then had markedly increased gibbous tumors on either side of the spine like old-fashioned saddle-bags, very hard. The patient was in a desperate condition, and taking opium. On February 8, 1902, an incision was made into the mass, and a handful or two of broken down vertebræ and grumous material taken out; no pus at all. The cavity was packed and closed. The patient was very weak—artificial respiration was used for a while. Then he was given Coley toxines.

Dr. Brooks, Pathologist, reported as follows: "Giant cell sarcoma, highly vascular, made up of fibroblasts, among which a good many plasma cells. Areas of pigmentation, probably from local hemorrhages. Probably originated from bone or periosteum. Serum treatment begun Feb. 18, 1902, and stopped May 15, 1902." The X-ray was not used, as the diagnosis proved to be correct. He now seems to be practically well.

Dr. Elliott presented a case of wasting disease for diagnosis. The patient is now three and one-half years old. There is great tenderness of the surface of the body. About six months ago Pott's disease was suspected on account of the attitude of the child, pain and partial paralysis of the lower extremities, and a plaster jacket was applied. The jacket was worn for three or four weeks with no evidence of improvement. There is now no rigidity of the spine and no deformity, but a certain amount of paralysis—drop-foot—and great tenderness about the hip-joint on both sides. Very exaggerated reflexes of both knees. There are well-marked evidences of rachitis, but that diagnosis would not explain all the symptoms—the drop-foot, continuance of pain and exaggerated reflexes. Poliomyelitis is thrown out on the ground of the exaggerated reflexes.

Dr. Halsted Myers presented the following case: E. F., four years old. Double congenital dislocation of hips. Congenital deformities of toes also. April 1, 1900, with the assistance of Dr. Schoonmaker, the right hip was reduced and put up in a spica with 40 degrees of abduction. He was soon allowed to walk with a high shoe on the opposite side. In November of the same year, a splint was applied to maintain the abduction and in December the result was considered perfect. The other hip was then reduced, with difficulty, and a spica applied with 60 degrees abduction. This, later on, was replaced by the abduction splint. In the summer of 1902, two and one-half years afterward, an abduction splint was worn again for a while on the right side, as there seemed to be some prominence of trochanter, and the boy was very wild. X-ray examination now shows both hips firmly in position. Limbs are of equal length, no limp. Normal motion, no pain. Dr. Myers stated that he had been unsuccessful in putting up both hips at once, so in this case he put up one, then the other. The time required is a little longer than by the usual method. The X-ray plate showed marked deformity of the head and neck of the right femur, and acetabulum somewhat undeveloped. The boy has now gone about a year without any protection, and may be considered cured.

Dr. Napier reported an operation for the relief of the deformity following cerebral hemiplegia. J. O., male, aged fourteen years. At seventeen months had cerebral hemiplegia, attended with convulsions; often four or five a day; lately, one or two at night. The mental powers were considerably weakened, so that an esthetic rather than a functional result was expected from an operation. The left arm and hand exhibited spastic contractures, with elbow slightly flexed; forearm pronated, hand and fingers flexed, thumb adducted—no power of supination. With considerable effort he could, by flexing the fingers, extend the hand, or extend the fingers, with the hand flexed; and distal phalanx of thumb could be extended. The left foot was held in talipes equino varus. Operation at Kings County Hospital, April 15, 1902. The attachment of the pronator radii teres was changed according to the method of Tubby. The hand and arm were held in the overcorrected position with plaster of Paris for six weeks. On removal, the arm was held naturally, but still no power of supination. In June the second step in the operation was performed. The tendons of the palmaris longus, and flexors carpi radialis and ulnaris were divided near their insertions and passed through the interosseous membrane just above the pronator quadratus. The extensor communis digitorum tendon was shortened by doubling, and the radial and ulna flexors were inserted into it and attached by treated silk suture. The tendon of the extensor secundi internodii pollicis was in the same way shortened and the palmaris tendon secured to it. The tendon of the flexor longus pollicis was then lengthened by z-shaped incision. All the suturing of tendons was done with fine silk, and after scarifying the arm was put up in plaster dressing in overcorrection. After six weeks, dressings were removed. Wounds were healed by primary union. Unfortunately the boy was taken immediately from the hospital and sent to Craig Colony before a thorough examination was made. A report from there in January, 1903, showed the arm pronated, hand extended, fingers flexed, thumb adducted. Perhaps nothing better should be expected with after-treatment neglected. Possibly even now condition might be improved with massage, electricity and muscle education. The attempt to change the pronator radii teres into a supinator evidently failed, probably owing to adhesions. It would seem better to remove dressings at end of second or third week for careful passive manipulation. Nothing was done on the foot but a tenotomy of the tendo achillis and forcible straightening. The same principles of balancing the muscles by tendon transplantation should give beneficial results in the foot. This was done but recently, but in a five-year-old child before the stage of deformity; here a slip from the tendo achillis was used to reinforce the weak peroneus longus and brevis and half of the tibialis anticus tendon was attached to the peroneus tertius and to the periosteum over the cuboid bone. In taking the slip from the tendo achillis it might be better to take from the internal border of the tendon. In this way the remaining portion would draw more on the outer half of the os calcis, thus aiding eversion of the sole, which would be desirable. It would seem more rational to operate early in these cases before deformity has taken place, and thus hope to prevent it.

Dr. Brackett, of Boston, read a paper entitled: "Gymnastics in the Treatment of Lateral Curvature," with demonstration. He prefaced his paper by remarking that its title might lead one to believe that he advocated the treatment of lateral curvature by gymnastics. This he disclaimed, stating that the paper was a brief discussion of some principles which might be used in the treatment of lateral curvature.

**Demonstration.**—Two cases were furnished by the Hospital for Ruptured and Crippled, and being unused to the exercises, showed difficulties encountered by the instructor. This method of gymnastic exercises is practically indicated when, in cases beyond the ordinary light stages, it is desired to re-adjust muscular control of the individual, on the principle that in whatever position the patient exercises, that position tends to become permanent, and the more the position is corrected, the greater the ability to hold that position of correction. The first step is to look at the child and see what its faults in position are, and what changes its flexibility will allow. Place it in as nearly correct attitude as possible, then train it to take a still better position, at first by simple "stretch exercises." Tell the child to make itself tall, and an improvement in position is at once noted. Train the child to hold the spine in position, and to raise and then bring the arms back to side, and relax. Children at first try to make themselves rigid. Overcome that by telling them to raise the arms gently, at the side, and to reach with the ends of the fingers. Then place the child in a position impossible for it to take by itself. Tell it to stretch out and up and then push, getting a feeling of lift, then push it still straighter, and the position can be held for some time. The second step is to give exercises on the side plane, without moving the back. In order to do this it is well to use as heavy a dumb-bell as possible, and maintain correct position. Then give ordinary push exercises. The third step is to give exercises on the forward plane, which disturbs the position of the back. The next step is to give exercises which change the balance in standing, still maintaining the proper position of the back.

In doing this it is well to use heavy dumb-bells, five, six or seven pounds. In using these dumb-bells, however, the difficulty is that bringing them down causes a tendency toward greater sag than before. It has been avoided by having an assistant stand near to take the bells away after being raised, but that means a great deal of help. A device has been invented by the husband of one of the assistants working at the hospital—an inverted bicycle pump, fastened to the ceiling. The child grasps the handle, which is of any desired weight, and pushes it up, and then the suction of the pump greatly diminishes the weight of the handle as it comes down again. This method of applying gymnastics to cases of lateral curvature can only be used in those where it is desired, not to develop muscular strength, but muscular control. It never can be used in classes; it demands an assistant's entire time. In those cases where it has been applied it has given a good deal of satisfaction.

Dr. V. Gibney said that this line of work he had not gone into much. He thought the training and position Dr. Brackett gave, not a very desirable feature in lateral curvature, although it had been tried in classes. Some cases were benefited, others not. When not, plaster jackets, braces, etc., had been applied. He had talked with gentlemen in different cities on the subject and came home not very well satisfied with the results obtained. Dr. Brackett, however, had the reputation of being a painstaking, careful man, and the principles he had enunciated demanded respect. He believed an opportunity would be given before long of seeing further classifications taken up; Dr. Brackett had shown only one phase of the subject.

Dr. Teschner said he did not agree with Dr. Gibney that in cases of lateral curvature a certain number were benefited and a large proportion were not, but believed everything possible should be done for them. In regard to Dr. Brackett's first principle (the increase of flexibility in the spine by forcible correction whether passive or active so far as the patient is concerned, by apparatus or by the hands of an operator, or the exercise of muscular powers through the dictation of the individual patient), Dr. Teschner thought this flexibility very easily attained by proper exertion on the part of the patient. He noted that in Dr. Brackett's efforts to place the spine of child on whom he demonstrated in a proper position, her right heel was raised two inches from the floor and kept there while the spine was straight. The spine was straightened by bringing the right side of the pelvis two inches higher than normal. In regard to the weight coming down and causing sagging of the spine on the side where the deformity exists, experience had taught him that this was no danger at all. The greater the increase of curvature, the greater the flexibility of the spine. The reaction is in proportion to the intensity of the action. The patients cannot be exercised without due regard to symmetry and symmetrical action. The unequal muscles tend to become equal in length and strength, as lines on a spirited horse keep the head straight, by equal tension.

In regard to self-retention of correct position—the principle is an excellent one. It is, however, more difficult for the patient to attain than to maintain the proper position. Many of these patients are unable to mentally grasp what is required of them. When asked to do a task, it becomes necessary for them to attain a proper position before they can perform it; then they do it automatically, not with intent, and in a measure it becomes habitual and retention of the improved posture follows.

Dr. Teschner said he was opposed to forcible correction by the use of apparatus or plaster jackets, and thought more could be accomplished by rational gymnastic treatment; that it was, therefore, a waste of time to try other methods.

Dr. Brackett said that the way the children he presented did the work was not as he wanted it done—that he said before the demonstration that their faults would show difficulties to be overcome.

He agreed with what Dr. Teschner had said in regard to principles, except that a position attained by an indirect way does not help the patient to maintain the position desired, at such time as he is not exercising. He said he was not trying to make the children strong, but able to hold themselves properly all during their waking hours, and if they are forced to think of their position there will be a continuous effort of the will, which in time will lead to permanent results.

**Typhoid Spine.**—Dr. Townsend quoted authorities who claimed that typhoid spine never occurred in young children. He said this was the first case he had seen under ten years of age, and it was interesting because typhoid fever itself was said never to occur in young children.

**Tendon Transplantation.**—Dr. Dowd said the result is much firmer when the tendon is passed through the bone in this way than where other methods are employed.

Although in this case the long extensor of the toe is divided, still the power of extension of the toe is retained.

**Potts-Disease—Sarcoma.**—Dr. Elliott said it was interesting to note the change in the deformity; at first annular, then saddle-bag in shape on either side of the spinous processes, then a return to the annular form.

Dr. H. Gibney saw the case when there was no deformity. A diagnosis of appendicitis had been made, and the patient had been under medical treatment for that disease. He had noted a slight angular deformity. Dr. Virgil Gibney had not spoken of the incipiency of the case when there had been no deformity.

## BOOK REVIEWS.

CANCER AND OTHER TUMORS OF THE STOMACH. By SAMUEL FENWICK, M.D., F.R.C.P., Consulting Physician to the London Hospital, and W. SOLTAN FENWICK, M.D., Lond., M.R.C.P.; Senior Physician to the London Temperance Hospital; Physician to the Evelina Hospital for Sick Children. P. Blakiston's Son & Co., Philadelphia.

THE increasing interest attaching to the study of carcinoma owing to its growing prevalence lends added importance to the present volume. Representing as it does the results of the observations of two distinguished clinicians it is a contribution of the greatest value to the literature of the subject and the volume itself more than fulfils the expectations it excites. It is divided into two parts, the first of which deals with gastric carcinoma, and the second with the various other tumors of the stomach and duodenum. The wealth of material drawn upon by the writers may be appreciated when it is stated that the general description of the morbid anatomy of the malignant disease is based upon the post-mortem records of over three thousand cases, while the more special phenomena connected with its pathology are derived from an analysis of 265 cases, which were examined after death at the London Hospital and the London Temperance Hospital. The use of the same statistics has furnished interesting observations on the etiology of the disease which are somewhat at variance with the conventional views, since they show that the disease is equally common in the two sexes, and that the liability to it increases with each decade of life up to the age of eighty. A curious fact is that though the death rate from carcinoma generally is steadily increasing in all parts of the world, yet during the past four years the number of those dying of the gastric lesion in England has undergone no appreciable augmentation. Another point of interest is the seasonal difference in the occurrence of the disease, more than 60 per cent. of the deaths taking place between June and November, while the admissions to the hospital during the winter months constituted only 14 per cent. of the total number for the year. In the discussion of the question of diagnosis stress is laid on the fact that where the disease exists the sulphocyanide of potassium in the saliva tends to disappear, and the opinion is expressed that while it is at present true that we do not possess any certain means of recognizing the existence of carcinoma before it has infected the lymphatics, it is possible that in the future some chemical product of the morbid growth may be discovered in the urine or saliva which will render early diagnosis a matter of ease and certainty. A palpable tumor is said to be absent in nearly one-fifth of all cases of carcinoma of the stomach, while its presence shows that the growth has given rise either to extensive infiltration of the gastric wall or to a secondary infection of the omentum and lymphatics, and that, therefore, the disease has existed for a considerable length of time, and is too far advanced to permit of complete removal.

Of the sections on non-malignant tumors those on concretions and cysts are particularly interesting as is also the one on syphilis of the stomach.

A considerable number of excellent reproductions of photographs of specimens advantageously elucidate the text as do also the numerous interpolated case histories. Considered from the standpoint of the medical man the work is perfect, though a surgeon would wish that it had been prepared in collaboration with one of his own confrères in order to present both aspects of the subject.

PROCEEDINGS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION at the Fifty-eighth Annual Meeting, held in Montreal, Que., June 17-20, 1902. Published by American Medico-Psychological Association, 1902.

THERE are some excellent and generally interesting articles in this volume. For instance, Dr. Stanley Abbott's article on the Criteria of Insanity and the Problems of Psychiatry deserves to be widely read. Dr. James Buckley's article on the possible influence of Rational Conversation on the Insane is another communication that deserves to have a wider circulation than that of a volume of transactions. Dr. Edward B. Lane's article, on Litigious Insanity with Report of a Case, is an informing discussion of a subject not sufficiently understood. Dr. Hattie's article on The Rôle of Education in the Development of Self-control also deserves to be more widely circulated than in the transactions of a society. As a matter of fact so many of these psychiatric questions have become of general interest now that such articles should be published in the general medical periodicals.

MANUAL OF SURGERY FOR STUDENTS AND PRACTITIONERS. By WILLIAM ROSE, M.B., B.S., Lond., F.R.C.S., Professor of Clinical Surgery in Kings College and Senior Surgeon at the Kings College Hospital, etc., and ALBERT CARLESS, M.S., Lond., F.R.C.S., Surgeon to Kings College Hospital and Teacher of Operative Surgery in Kings College, London. Fifth Edition. Wm. Wood & Co., New York.

THIS admirable text-book fulfils the claims so clearly set forth for it by its authors in their preface. It presents to the student the facts of surgical science in a concise and succinct form, with sufficient detail to prepare him for all ordinary examinations. At the same time the practitioner and his needs have not been overlooked, and the authors have endeavored to present in considerable detail the modern surgery of conditions which he is most apt to be concerned with. They have, of course, suffered in common with others from the fact that the enormous increase in surgical literature has made it almost impossible to compress the science into a single text-book of manageable size. Their judgment was certainly good when they excluded all historical and bibliographic references as well as considerations of the surgery of the eye, ear and female genital organs. Like Mr. Treves, whose admirable little text-book is too well known to need citation, the book suffers by reason of the presence of many old and very undesirable illustrations. The minute one looks at the work, these stamp it as not of American origin. Nevertheless, there are some very excellent X-rays and the illustrations in connection with the chapter on Orthopedic Surgery are most excellent. In a future edition of this admirable work, it might be hoped that the rather grotesque outlines given on Page 888, indicating the line for incision in amputation of the breast in cancer, should be improved upon. Touching on the treatment of carcinoma of the breast, which this illustration is intended to elucidate, it would perhaps have been better if the eminent authors had omitted the division of the operative intervention into "complete" and "incomplete," inasmuch as they say in their opening lines that "to give the patient as good a chance as possible of permanent cure, the excision should be very radical."

Chapter XIII deals most interestingly and instructively with the surgery of the lymphatics, a department which heretofore has been altogether too much neglected. The book is thoroughly up-to-date in its views on the treatment of exophthalmic goiter, and the authors are to be congratulated that they have crowded into a very small space most of the facts that are known about this curious condition. Just as exception may be taken to the description of the treatment of mammary carcinomata, so objection might be made to the methods advised in treating carcinoma of the tongue. From our standpoint the authors do not take a sufficiently radical view of the necessity of removing all glands in the vicinity of a carcinomatous growth. This is illustrated by the prominence which they give to the intrabuccal method of removing portions of the tongue. They do not agree with most American surgeons who believe that the question of glandular infiltration from carcinoma probably takes place as soon as, or very shortly after, the growth is noticed by the patient or even earlier. Thus it does not seem quite modern to say as they do, that "where the jaw, floor of the mouth or glands in the neck are much implicated, an extrabuccal operation is necessary." The chapter on Injuries of Bones is excellent, but here again are to be noticed marked discrepancies from American methods and teaching. This is particularly noticeable in their consideration of fractures of the neck of the femur, which they say are commonly divided into intra- and extracapsular varieties. The treatment is outlined entirely upon the diagnosis of these special varieties. Liston's splint, as described, would seem vastly inferior to the methods of extension usually employed here. It is difficult to see any difference between it with its long side-splint and perineal pad and the methods employed here before the introduction of the Buck extension. For extracapsular fractures as well as for fractures of the upper third of the shaft, Hodgen's splint is advocated.

In conclusion, it would seem right to say that this volume, which is presented to us in admirable typographical form, should not be too critically judged by our own standards of merit. That it will fill a place in our American institutions and among our practitioners is not for a moment to be doubted, and it may be confidently expected that a succeeding edition will be even better than the present.

## BOOKS RECEIVED.

*The* MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

WILD OATS. By M. C. Hine. 16mo. P. Blakiston's Son & Co., Philadelphia.

PROCEEDINGS OF THE NEBRASKA STATE MEDICAL SOCIETY. 1902. 8vo, 360 pages.

BURDETT'S HOSPITAL AND CHARITIES. 1903. demi 8vo, 1020 pages. Scientific Press, Ltd., London.

THE BUCKEYE DOCTOR. By W. W. Pennell, M.D. 8vo, 345 pages. The Grafton Press, New York.

BACTERIOLOGY. By F. C. Zapffe, M.D. 8vo, 350 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

DISEASES OF THE EYE. By C. A. Veasey, M.D. 8vo, 412 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

TUBERCULOSIS. By Norman Bridge, M.D. 8vo, 302 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

THE PRACTICAL DETAILS OF CATARACT EXTRACTION. By M. H. Herbert, M.D. 12mo, 109 pages. Illustrated. Wm. Wood & Co., New York.

MEDICAL AND SURGICAL USE OF ELECTRICITY. A. D. Rockwell, M.D. New edition. 8vo, 656 pages. Illustrated. E. B. Treat & Co., New York.

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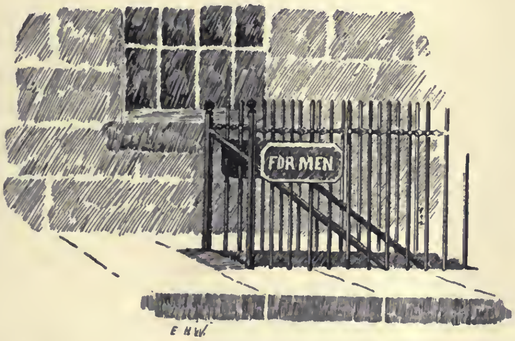
## ORIGINAL ARTICLES.

### THE NEED OF PUBLIC TOILETS IN AMERICAN CITIES.*

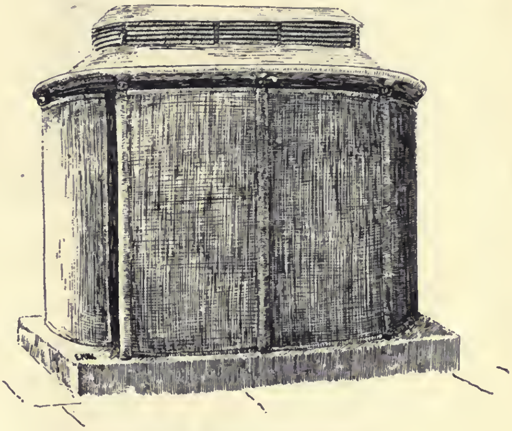
BY EDWARD H. WILLIAMS, M.D.,
OF NEW YORK.

WHILE it is undoubtedly true, as a general proposition, that American cities have little to learn from European in the way of sanitary improvements, in one respect at least most of them are behind their English and continental sisters. This defect is in the matter of public toilets and lavatories. The absence of such necessary sanitary accommodations is often extremely embarrassing to strangers, particularly those coming from abroad and unaccustomed to our language and customs. New York, being not only the largest city but also the largest receiving port of the country, should have set the example for America and have remedied this defect long ago, just as such cities as London, Paris and Berlin, have done, but at the present time it is no better in this respect than any other American city.

To the old resident of the metropolis, acquainted with city places and city ways, this defect may seem like a very trivial one; but to a very large proportion of the forty or fifty thousand transients, foreigners and others, who are poured into New York daily it appears otherwise. To many of them it is a source of great inconvenience, discomfort, and frequently embarrassment and distress. Imagine the predicament of an American, unacquainted with the French language and French customs, should he find on reaching Paris that all the public toilets had been removed! In his wanderings about the city he would always have access to the restaurants, of course, if he cared to purchase liquid or other refreshments, and as a last resort, a thirty-cent cab would drive him at any time to his hotel; but on the whole he would miss very acutely the present sanitary structures scattered about the city. And yet his position would be practically identical with that of a Frenchman visiting New York, with perhaps this very marked difference—that drinks and cabs are much more expensive here. For at the present time about the only available toilet places in New York are in the restaurants, saloons, and elevated stations, and these cannot be considered, strictly speaking, as free public places. Furthermore, they are not all accessible to women, and in certain localities (the saloons excepted) are few in number and widely separated.



Entrance to London Underground Toilet and Lavatory.



One type of Berlin Urinal.

The argument against public sanitary places of this sort is, of course, that any such structures, conspicuous enough to be useful to strangers, are disfiguring to the city. But in reply it may be pointed out that such cities as Paris, Berlin, and Vienna, have them by hundreds, and are nevertheless considered much more beautiful cities than New York. Furthermore, these structures are not shocking even to the American sense of modesty and propriety, or at least not enough so that American visitors or residents of those cities would vote for their removal if they had the chance. To be sure some of the cruder forms, in the outlying districts and poor localities, are disgracefully public and open, but it may be taken for granted that no such similar structures would ever be tolerated even in the lowest quarter of New York or any other American city.

But, even granting that most of the Paris and Vienna public places are objectionable on account of their unsightliness, it is still possible to overcome such an objection by placing them underground, as has been done in London. As New York is just beginning upon the construction of a vast network of other underground structures it seems a most appropriate time to consider the construction of public lavatories and toilets in connection with them. Of course there will be toilets and lavatories in the stations of the subway as now planned, but as these will only be available to persons who have paid a fare, they cannot be considered free public places.

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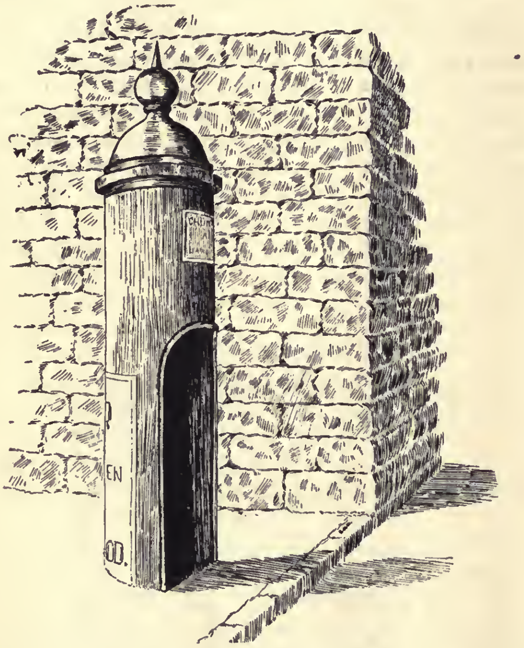
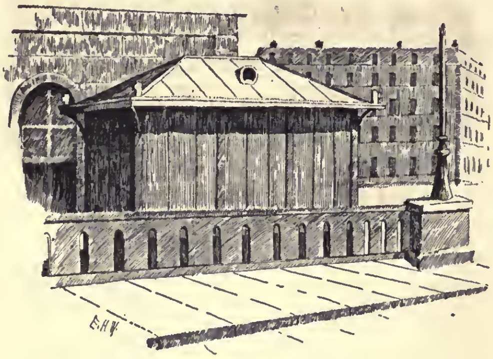
* With illustrations by the writer.



An Objectionable Form of Urinal, seen in some of the outlying districts of Paris.

The London underground toilets, although open to improvement, would serve as good models upon which to base similar structures in New York. In London these toilets are placed either directly under the streets or at one side, according to the width and shape of the roadway. The entrances are simply stairways, surrounded by neat iron fences, bearing unobjectionable, but unmistakable signs, "for men" or "for women," respectively. The stairway leads into a tiled passageway, on one side of which are urinals, the opposite side being built into closets. The urinals are free, but the closets are arranged with a penny-in-the-slot device, which makes them reimbursing but still not prohibitive. There are other little enclosures, somewhat similar to those now in the Grand Central Station, where a person may drop in a penny and have the use of wash bowl, hot and cold water, soap, towel, clothes brush, etc. There is also an attendant in charge whose duty it is to look after the convenience of the public. On the whole these underground structures are clean, sanitary, and, by the penny-in-the-slot devices, practically self supporting—some of them even more than that.



One type of Paris Toilet.

Of course the initial cost of an adequate number of such toilets and lavatories in New York would be very great, but this cost could be materially lessened if they were undertaken at the present time and in conjunction with the present underground structures either building or projected. It would not be necessary, however, to have elaborate and expensive structures excepting in the crowded districts of the city. For the uptown and outlying places simple and inexpensive ones on the street, such as those in similar localities in European cities, would answer equally well, and could be made absolutely unobjectionable. The cost of these would be comparatively little, and they could be made reimbursing, as in Paris, by the available advertising space that they could be made to afford. To be sure, such buildings covered with glaring advertisements would not be particularly pleasing to the eye, but after all they could be scarcely less so than the flaming bill-boards, and painted sides of buildings, seen everywhere now.

Paris Street Urinal, showing tower used for advertisements.

It seems paradoxical that in a city like New York, where a person may find places for the gratification of most of his wants or desires at almost every turning—hotels, restaurants, saloons, theaters—that he (or she) may be put to the greatest discomfort before he can respond to one of nature's urgent demands. And yet such is the case to-day, more particularly in the case of women, to whom the saloon is not accessible.

It is contended by many people that one of the chief reasons for New York, and other cities, not having free toilets is because the saloons do not wish them—that saloon-keepers finding it more profitable for their business not to have them. If this is true it is a strong argument in favor of such structures, and one that temperance societies might do well to consider seriously.

In Paris, one time, a thirsty Englishman, recognizing the crying need of public drinking places in the city, immortalized his name by establishing numerous drinking fountains. Perhaps if this same Englishman had visited America he would have extended his charity to his western cousins and presented New York with public toilets. It is certain that he would have found the "crying need" of them.

41 East Twenty-ninth Street.

# THE MORBID ANATOMY AND PATHOLOGY OF TABES.*

BY JOSEPH COLLINS, M.D.,
OF NEW YORK;
PROFESSOR OF NERVOUS AND MENTAL DISEASES IN THE POST-GRADUATE MEDICAL SCHOOL; VISITING PHYSICIAN TO THE CITY HOSPITAL; CONSULTING NEUROLOGIST TO THE HOSPITAL FOR RUPTURED AND CRIPPLED, ETC.

## PART III: ANALYSIS OF 140 CASES OF LOCOMOTOR ATAXIA.

(Continued from Page 1126.)

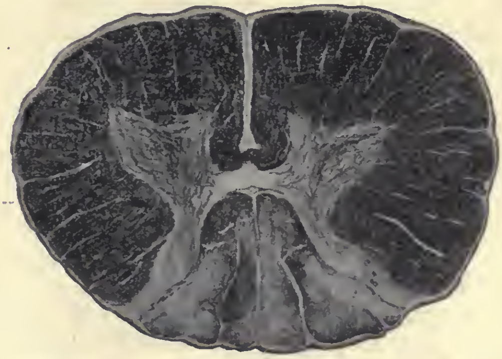
In cases of tabes with bulbar involvement extensive lesions are found in the oblongata, v. Rensz has recently described such a case in which in addition to the ordinary lesions of the spinal cord there were found: degeneration of both glossopharyngeal ascending roots, the nucleus ambiguous, the hypoglossal nucleus and root, and of the roots of both vagi.

The theories that have been advanced to explain the degeneration of the posterior columns of the spinal cord and of the posterior roots, *i.e.*, the principal and essential lesions of tabes may be enumerated under five headings: (1) The vascular theory; (2) the theory of primitive degeneration of the posterior columns, sometimes called the medullary theory; (3) the theory that the essential lesion is (*a*) primary, (*b*) secondary degeneration of the posterior roots; (4) the theory that primary lesion is of the cells of the ganglia of the posterior roots, and (5) the neuritic theory; the theory that the peripheral nerves are first attacked and that the lesions that finally overtake the posterior roots and columns in a secondary manner (Leyden, Goldscheider, De Massary). These theories have been found one after the other to be insufficient to explain the lesions of tabes and have all, save the third, more or less been abandoned.

The vascular theory, *i.e.*, the theory which postulated the lesions of the posterior columns to be secondary to disease of the blood-vessels, has long since been given over although at one time it was looked upon with considerable favor. In some cases changes in the blood-vessels of considerable severity and extent are found but in the vast majority of cases they are too inconstant and too trifling to be looked upon as the lesion.

The second of the above enumerated theories which is based upon the occurrence of a primitive sclerosis of the spinal cord, which developing first in certain zones of the posterior columns gradually invades other and terminates by destroying completely the parenchyma of this portion of the cord, was at one time more uniformly accepted than any other. But at the present time it has been practically abandoned. Nevertheless, in a modified form it is likely to be heard from again. Indeed, the theory that Marie and Guillain have recently promulgated (*Revue Neurologique,* Jan. 31, 1903) brings it at once to the front. These authors claim that they have never been able to accept the teaching which maintains that the primitive lesion of tabes is a root lesion and exclusively a root lesion. They deny that the topography of the zones of sclerosis in early tabes coincides constantly with the pathways of the posterior roots. Undoubtedly there are always root lesions within the spinal cord which are not systematized, or at least which do not coincide with the intramedullary course of a root. Moreover, it is seen very often that even when the lesion has the appearance of a root degeneration that it is in reality what may be called pseudo-radicular, the appearance of root degeneration being given to it by the alteration of the myelin fibers adjacent to certain intestitial tracts. That in the first stages, the lesions that are apparent with the method of Weigert begin in certain regions and take special certain systems of fibers, they do not deny, but they claim that there is often a pseudo-systematization due to the disposition of the lymphatic channels and the intramedullary septa of the pia. Furthermore they point out that from a histological point of view the lesions of tabes do not present themselves *locally* as Wallerian degenerations, this is now universally admitted. There is undoubtedly a process of Wallerian degeneration in the upper lesions of the spinal cord consecutive to intramedullary lesions of the different fibers of the posterior columns in the lower dorsal region, but there is no true Wallerian degeneration in the real tabetic process.

Fig. 8.



Section from the Eighth Cervical Segment, Showing Extensive Lesions of the Posterior Columns and Roots.

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* Part I of this series appeared in the MEDICAL NEWS of January 3; Part II on March 7 and 14.

Marie and Guillain further contend that in cases examined according to the method of Marchi one sees that the granular bodies existing in the posterior columns, do not present any localization which recalls root systematization, but they are on the contrary diffused through the entire extent of the posterior columns. One sees, moreover, in these sections, that the intramedullary lymphatic spaces are dilated and that the blackish granules are deposited in the cells of the ependyma itself in certain regions where the canal of the ependyma is permeable. When the process is particularly intense it is possible to force the limits of the posterior lymphatic system, and in this case the portion of the lateral columns bordering on the apex of the posterior horn, may show also the granular bodies indicating a similar alteration.

These writers have been led to promulgate a new theory which they believe will be of great service in assisting us to a comprehension of the pathogenesis of tabes. Their contention is that the initial lesion of tabes is nothing else than a syphilitic lesion of the posterior lymphatic system of the spinal cord. They maintain that there exists in the spinal cord, a posterior lymphatic system constituted by the posterior columns, the posterior roots, and the juxtaposed pia which is particularly active and relatively independent.

The lesion of tabes, they maintain, is alone a degeneration secondary to and dependent upon a lesion of the roots at their point of entrance through the meninges, it is a lesion of the entire lymphatic system of the spinal cord. From the point of view of general anatomy, this lymphatic system is autonomous.

Nageotte has already pointed out that the systematization of tabes depended upon the disposition of the lymphatic apparatus which allows the morbific agency to be operative on a certain definite part of the posterior roots, and upon a locus minoris resistentiæ found in the posterior roots.

Marie and Guillain say that anatomists admit that there exists in the pia a lymphatic system. Between its external and internal layers is a central lymphatic space. Anatomists have seen lymphatic vessels in this membrane. The cellular elements that one finds in the cerebrospinal fluids of tabetics are lymph elements. Pathology teaches that the lymphatic system of the posterior meninges is a system which has no communication or very little communication with the anterolateral lymphatic system. Therefore the pathology of the posterior meninges is a special pathology. They recall that it is in the posterior meninges especially that one sees calcareous plaques and that it is here that one sees blood in lymphatic stasis consecutive to cerebral hemorrhages. Tabes is a lymphangitis of the posterior lymphatic system of the spinal cord, if the word lymphangitis does not call up the remembrance of large vessels and inflamed canaliculi. Lymphangitis as they use it does not mean a trajective lymphangitis, but a radicular lymphangitis, a histological lymphangitis.

The alteration of the pia, *i.e.,* the meningitis which is so commonly found in the posterior surface of the dorsolumbar cord in tabes, is of the greatest importance according to these writers in the interpretation of the lesion of tabes, because it is this meningeal alteration that leads to disturbance of the meningo-medullary lymphatic circulation.

Marie does not deny the importance of lesion of the posterior roots in the production of the alterations of the posterior columns but he thinks there is something more than degeneration of the roots. The disease of the posterior roots is itself secondary to affection of the posterior lymphatic system of the cord.

The theory that the characteristic lesion of tabes is a degeneration of the posterior roots has steadily gained ground during the past twenty-five years and it is to-day with one modification or another generally accepted. As was stated previously, Marie and Guillain now maintain that this theory is not entirely in accord with the facts. Until this time, however, Marie's published opinion has been that the degeneration of the posterior roots was secondary not only to alteration of the cells of the spinal ganglia but to alteration of the peripheral ganglia whose existence was posited on theoretical grounds. The part of this theory that has been much discussed and which is still far from being settled is whether the lesion of the posterior roots is primary or whether it is secondary to disease of the cells of the spinal ganglia, of whose axones the posterior roots are constituted, or to compression of the posterior roots principally by lesion of the pia. Numerous writers, (Stroebe, Oppenheim, Marie, Babes) have testified to the existence of changes in the cells of the spinal ganglia in cases of tabes, but despite this it seems to be the unanimous opinion of everyone entitled to one, that the lesions of the ganglia are too trifling and inconstant to account for the lesions of tabes. Moreover it has been proven again and again that the cells of the spinal ganglia are often normal in tabes. Furthermore, if disease of the cells of the spinal ganglia was a constant element in tabes the peripheral sensory nerves should be the seat of constant and profound change which they are not, although they are often found diseased. Dejerine has pointed out that if the atrophy of the posterior roots was dependent upon a lesion of the ganglion, the atrophy should extend as far as the peripheral end of this root which passing out from the ganglion reunites with the anterior roots to form the spinal nerves; but this peripheral end is intact in tabes. Babinski has maintained that even though there be no structural alterations in the cells of the ganglion there may be a functional or dynamic change to which the degeneration of the posterior roots is secondary. The theory that the lesions of the posterior roots is secondary to disease of the pia and arachnoid which compresses and strangles them is to-day held to be the most probable theory by such reliable investigators as Obersteiner and Redlich, and Nageotte.

The point of penetration of the posterior root-bundle becomes so to say a locus minoris resistentiæ which from relatively slight changes may be the starting point of profound lesion. If the penetrating posterior roots experience a certain compression a slight degree of meningitis with consequent connective tissue contraction will be sufficient to increase this pressure of the meninges and cause extensive intramedullary root degeneration.. The idea that posterior meningitis causes the lesions of tabes by pressure contact upon the columns of the cord as was originally taught by Rindfleisch has been abandoned.

Everyone who has had antomical experience with nervous diseases knows that syphilitic meningitis, as the disease is ordinarily understood, does not cause the lesions characteristic of tabes. It causes pathological changes in the blood-vessels, meninges and substance of the cord that is unmistakable, which may cause a complex of symptoms to which the name pseudotabes is given. (See article on Syphilitic Pseudotabes, *N. Y. Medical Journal,* April 4, 1903.)

Concerning the existence of implication of the pia in the majority of the cases of tabes there can be no doubt. Although it is most evident in the pia of the posterior surface of the cord it is not always narrowly confined to these limits. Disease of the pia in tabes is variable in intensity and constancy. When it occurs the characteristic feature of the meningeal lesion is connective tissue hyperplasia. It may or may not show the cellular infiltration and vascular changes that are supposed to be *sine qua non* of an inflammatory process. The newly formed connective tissue is often unevenly developed and existing around the posterior roots at the point of their entrance into the cord undergoes contraction as connective tissue always does and strangles them. Redlich and Obersteiner found from a study of longitudinal sections of tabetic cords with such meningitis, that every spot where the posterior roots penetrate the pia, distinct strangulation of the roots was to be seen. The thickened pia did not seem to penetrate or invade the roots but merely to strangle them. Nageotte contends that the lesions described by Obersteiner and Redlich are not found in tabetic cords that are hardened in the vertebral canal. Although the theory of Redlich and Obersteiner fits in well with the theory of the syphilitic origin of tabes, it has not received wide acceptation. The fact that such involvement of the meninges as that they describe is by no means constant in tabes, is a serious objection to it. Another is that it does not explain the degeneration of the part of the posterior roots between the ganglia and the pia. Moreover it leaves unexplained the disease of the optic and other cranial nerves, which occurs in such a considerable number of cases and which seem to be in nature the same kind of degeneration as that of the intramedullary posterior roots. The symmetry of the lesions in tabes, the great infrequency of unilateral tabes, the rarity of tabes-like lesions with frank meningitis, the clinical course of tabes all speak against the views of these authors.

It is well known to neurologists that Nageotte, a trustworthy French neuropathologist has contended unswervingly for acceptation of the view that the degeneration of the posterior columns and posterior roots is secondary to syphilitic disease of the meninges. His views differ materially from those of the writers just mentioned and especially concerning the point of departure of the morbid process. He has recently summarized his conclusions regarding the pathogenesis of tabes in the following words: "Tabes is characterized anatomically by an inflammatory lesion which attacks any number of sensory and motor roots at the point of their emergence from the subarachnoid space, which lesion is a general syphilosis of the meninges." He maintains that the beginning of the destructive process in tabes is immediately beneath the ganglia, that is at the other extremity of the extramedullary fiber from Obersteiner and Redlich. In every case that he has studied he has found a transverse lesion, consisting of perineuritis and mesoneuritis limited exactly to the space comprised between the ganglion and the entrance of the roots into the arachnoid sac. The lesion begins by an embryonic infiltration and develops into a sclerosis. The nerve roots atrophy secondarily either from irritation or from compression. The embryonic proliferation of the perineuritis forms a ring around the roots, which ring undergoes different modification but principally a peripheral sclerosis. The embryonic proliferation disassociates into secondary fasciculi, the elementary fasicles of the roots, and makes a place as it were for the fibrosis. The walls of the veins are studded with numerous embryonic nodules which causes a resemblance to the lesions of meningeal syphilis. The anterior roots are not always spared, they sometimes have lesions of similar intensity and character. De Massary who has a theory of his own, which will be considered later, found that similar conditions exist in the roots of patients dying from infectious diseases and he concludes therefore that the lesions described by Nageotte thus lose their specificity. Nageotte insists on the other hand, upon the fact that in transverse neuritis which develops around the root fibers the alteration of the nerves are distinguished by many factors; not only are the fibers compressed, but they are modified in their nutrition, the embryonic infiltration constituting an obstacle to the vascular and lymphatic circulation is conducive to the activity of toxic substances. The theory has been equally held to explain optic atrophy, it being maintained that this is due to a strangulation manifest on the optic nerve in its passage through the optic foramen following periostitis and syphilitic pachymeningitis which develops at this level, but this hypothesis is contradicted by facts.

Obersteiner has looked for the lesions of transverse root neuritis described by Nageotte in three cases of tabes. He has found them only in one, an old case. In a series of cases Redlich has observed the two kinds of lesion described by Nageotte, *i.e.*, the embryonic infiltration and the fibrous alterations. The embryonic infiltrations were not always equally distributed at the periphery but occasionally they displayed themselves in focci. It was not only the embryonic elements that proliferated, however, but the endothelial cells and the arachnoid. In three cases,and particularly in recent cases of tabes, the same author was unable to find these lesions, or they were scarcely evident, but in others in which the tabes was more advanced, the lesions were relatively less intense there being no parallelism between transverse neuritis and the degeneration of the posterior columns. Redlich, in discussing Nageotte's claim concludes that the lesion discovered by Nageotte does not explain the degeneration of the posterior columns of tabes. At the most it might have been merely an action of reinforcement on the root degeneration, but it no more explains the atrophy of the root than the spinal meningitis explains the sclerosis of the posterior columns. There is no parallelism between the transverse neuritis of Nageotte and degeneration of the posterior columns.

From all this it would seem that the interstitial lesion is by itself insufficient to cause destruction of the nerve fibers, and for Nageotte himself there is an important element which intervenes in this process, *i.e.*, action of the specific infection upon the nerve fiber. To his way of thinking this action is favored by the progression of the vascular lesions and the sclerosis depending upon the circulation. This action is in the beginning irritative, due to the toxic products of the specific agent acting upon the intramedullary pathway of the posterior root which atrophies before the extramedullary. It is astonishing, however, that an irritative lesion able to produce a Wallerian degeneration of the intramedullary pathway of the roots so intense that Nageotte was able to find it in a case of tabes of very rapid course, should leave unaffected for such a long time, the extramedullary pathway. This idea of an inflammatory lesion, acute or subacute, harmonizes badly with the slow atrophy, progressive and chronic, of the roots which characterizes the tabetic process. Moreover, it is inconstant and seems therefore necessary to conclude that if the interstitial lesion described attracts attention to a region "which appears to have special pathological aptitudes that explains its situation and its associations" it has not been absolutely demonstrated that it is the primitive lesion of tabes or that it plays the rôle of a second order in the pathogenesis of this condition.

Thomas and Hauser have recently discussed the entire subject of lesion of the ganglia and roots in tabes and as a result of their study of 11 cases of tabes they are led to formulate the following conclusions.

The fundamental lesion of tabes is a neuritis which presents some histological characters comparable to those that occur with toxic, experimental or pathological neuritis, such as lead neuritis, but which presents as a distinctive mark, its selection of the posterior roots, its slow and progressive progress and its slight tendency to recover. This neuritis makes the impression of a dystrophic trouble rather than an inflammatory alteration.

In order to explain the remarkable predilection of the degenerative process for the posterior roots, it may be necessary to posit various factors such as meningitis at the level of the entering posterior roots, the transverse neuritis of Nageotte, or even sometimes the strangulation described by Obersteiner. These lesions may be mechanical in their action, or what is much more likely, they may be conditioned by the vascular alterations which accompany them, or finally by their specificity. Further one may invoke a functional or dynamic alteration in the ganglion cell in which the trophic power is exercised less actively at the central end of the posteroir root than at the peripheral end. Finally it is still possible that it may be through infection of the subarachnoid cavity, as the researches of Nageotte and Babinski have suggested, the cerebrospinal fluid of tabetics acquires toxic properties. This should be considered as a cause of the atrophy of the posterior roots and of inflammation of the region of Nageotte which is in direct connection with the great subarachnoid cavity.

Tabes thus appears to them an affection much more complex than is ordinarily admitted. It is because of the multiplicity of lesions and the difficulty which their interpretation offers that Thomas and Hauser prefer an eclectic theory of its causation rather than the various general formulations which have been offered. They say in summary therefore, that the essential lesion of tabes is a dystrophy which involves the entire peripheral sensory neuron, the lesion being predominantly, however, of the central prolongation of the cell and which affects generally also certain portions of the motor protoneuron, and the sympathetic system.

The histological alterations are characterized by modifications in the nerve fibers comparable in certain conditions to those which occur in toxic, experimental or pathological degenerations.

If the cell body of the sensory protoneuron appears in general to preserve its normal structure and aspect, it is nevertheless often the seat of trophic lesions, and moreover, when these lesions are lacking it is legitimate to suppose that its trophic function is in a certain measure compromised.

A hypothesis which was formulated to explain the lesions of tabes by postulating primary lesion of the cells of the posterior spinal ganglia was at one time much more widely accepted than it is today, although it never had many followers. On theoretical grounds it seemed and still seems very plausible. The cell body is universally admitted to be the trophic center for the prolongations of a cell and the nerve cells of the spinal ganglion constitute the centers of the sensory neuron. The principal fiber or neuraxon of each of these cells goes into the posterior roots and so into the cord, the dendrites of the cell go to the periphery. The tabetic degeneration of the intramedullary fibers of the posterior columns is therefore a degeneration of the neuraxons of the spinal ganglion cells.

When neuropathologists first began investigations upon the state of the cells of the ganglia from cases of tabes, there seemed to be an inclination to accept the view that the alterations of the cells that were found were sufficient to account for the disease of the posterior roots and columns. Stroebe, who did considerable work in this direction, seemed to be of this mind. Later investigators such as Juliusberger and Meyer, Schaffer, and Marinesco working with the Nissl method of staining, have shown that the alterations of the cells of the spinal ganglia are inconstant and inconsiderable. The first-named of these authors recognizing this inconstancy of pathological change in ganglia claims that although the spinal ganglia present a normal anatomical appearance, this does not compel us to seek the origin of the disease elsewhere. In order to make the spinal ganglion of normal appearance, the point of origin of the tabetic degeneration, they fall back on the changes in the peripheral nerves. Their idea seems to be that the alteration of the chromatic substance in the cell is a positive anatomical reaction of the cell to morbid influence which acts upon the nerve cell and that it is an indication that the cell cannot undergo restitution. Their idea of the function of the spinal ganglion cells is that it changes or causes a metamorphosis of irritations or other stimuli coming from the periphery and going to the posterior columns. If these irritations are of abnormal influence an abnormal metamorphosis takes place and operates injuriously upon the posterior columns. The spinal ganglion cells have time enough to take care of themselves, as it were, to ward off any injurious influence, and therefore they do not find them diseased after these conditions have existed. This must strike every one, as it does the writer, as rather finely spun, especially in view of the fact that the peripheral changes in tabes are extremely slight in contrast with the central alterations. It is utterly impossible for me to conceive that trivial changes of the peripheral nerves cause the majestic lesions of the posterior columns.

All in all, the unsurmountable objection to the "ganglionary theory," as this theory has been called, is that the pathological alterations of the spinal ganglia are not found constantly in tabes and when they are found they are not of such a degree or nature that makes it legitimate to suppose that they stand in relationship to the degeneration of the posterior columns other than secondary or incident to it. An attempt has been made to circumvent this objection.

Babinski has suggested that the ganglionary theory of tabes need not necessarily be thrown over because the lesion of the constituents of the spinal ganglia are not found constantly. He asks whether it is not legitimate to invoke the existence of dynamic or functional troubles of the cells of the ganglia, not demonstrable by our methods of investigation, the effects of which are first manifest upon the terminals of the prolongations of the cells in the shape of detectable degeneration. This hypothesis presupposes that the first manifestations of pathological alteration in the cell occurs in the right branches of its ramifications which in itself is an unjustifiable presumption. But the unsurmountable objection to this is that the changes in the protoplasmic prolongations (going to the cutaneous periphery) are not found with the constancy and intensity that they should be even though the disorder of the ganglion cells was only dynamic. Thomas and Hauser have been able to demonstrate in cases in which lesion of the parenchymatous constituents of the posterior ganglia, varying from slight atrophy to complete disappearance, were to be made out that the peripheral prolongations of the ganglia preserved their integrity. Moreover, nothing has yet been brought forward to suggest that a dynamic perturbation goes on in the spinal ganglia.

One of the greatest objections to this hypothesis is that it does not explain the difference between the central and the peripheral prolongations of the spinal nerve cells. Those prolongations that go into the posterior roots are found degenerated in tabes even up to the ganglion cells, but on the other hand the peripheral pole of the ganglion, *i.e.*, the place from which the fibers go into the peripheral nerves, show scarcely any evidence of disease whatsoever. This finding necessitates a new hypothesis that will explain why the prolongations of a cell behave so differently when exposed to the same conditions, and this would be difficult to formulate because it is contrary to the law of degeneration which holds that after lesion of the cell the prolongations of that cell perish uniformly and without favoritism. Finally it is very difficult to reconcile it with the fact that degeneration within the posterior root confines itself closely to the cell and yet the disease of the cell should be only functional without causing changes that are detectable. It is furthermore contrary to the fact that the degeneration of the extra medullary roots is not infrequently found to be much less than that within the spinal cord. To explain this Marie has put forth the hypothesis that the medullary sheaths are dependent for their nourishment upon the axis cylinders, but that the latter is not a solid mass, but made up of fine primitive fibrilla closely pressed together, suspended probably in a fluid medium. If only a few primitive fibrillæ decay, the medullary sheaths may be preserved; if the majority of the fibrillæ or all of them degenerate the medullary sheaths must degenerate as well. We may presuppose then that the fibers entering into the posterior columns divide in an ascending and descending branch. Both of these branches will, therefore, have less fibrillæ than the trunk from which they came. In these branches, when degeneration of the fibrillæ takes place, destruction of the medullary sheaths will occur sooner than when the stem fibers are diseased while the number of fibrillæ is smaller than in the stem. This he considers to be in accord with the fact that the collaterals degenerate before the root-fibers. The only writers that need be considered who still adhere to the neuritic theory are Leyden and Goldscheider. De Massary seems inclined to the same view. They offer no proof that the starting point of the lesion is in the peripheral nerves save that these nerves are often found degenerated in tabes and that the theory fits well with the theory that cold and injury are exciting causes of tabes, which I in common with others consider to be practically of no importance (*vide* article on etiology). Against this opinion of Leyden and Goldscheider two facts speak very strongly. The first is that the peripheral degenerative changes have no relationship whatsoever in their intensity and extent to the intraspinal changes, and, second, that the histological connection between the peripheral nerves and the posterior roots, viz., the posterior ganglion is not necessarily diseased in tabes, and, indeed, is often found not diseased in tabes.

In conclusion it may be said that the evidence at hand tends to show that the essential lesion of tabes is an elective progressive degeneration, segmentary in type (in contradistinction to Wallerian), of the posterior columns of the spinal cord. The distribution of the degeneration therein corresponds with the intraspinal distribution of the posterior root-fibers. After the degenerative process in the cord has existed for an indefinite time, probably a protracted period in every case the endogenous fibers of the posterior columns are involved. This inclusion of the endogenous fibers changes the outline of the anatomical picture and the confines of the pathological process. In the majority of cases of tabes of any considerable duration that have been studied after death pathological alterations have been found in other portions of the nervous system, especially in the peripheral and cranial nerves and their ganglia and also in the brain and sympathetic nervous system.

Although none of the hypotheses that have been formulated to explain the pathogenesis and the point of origin of lesion are adequate, satisfactory or susceptible of demonstration that recently suggested by Marie and Guillian would seem to be more in accord with what we know of the etiology of tabes than any of the others. Adopting their theory it is probably that the lesions of tabes are the results of the activity of a poison generated by syphilis acting primarily upon the intramedullary distribution of the posterior roots. The changes in other parts of the nervous system may be incidental to the existence of this poison within the system or they may be secondary to the disorder of nutrition superinduced in the entire peripheral sensory neuron by disease of such an important portion of it as that which is affected in tabes.

This idea of the pathogenesis of tabes may be reconciled with a theory of origin put forth by Edinger some years ago, which is commonly known as the "compensation" theory or repair theory of tabes. In every exertion there is destructive metamorphosis in nerve cell and nerve fiber, which in health is compensated by repair. If the nutrition is defective from any cause such as from toxic product, syphilis, parasyphilis, etc., from injury, from exhaustion or from hereditary weakness, repair will be insufficient and degeneration may be the result. Some cord tracts seem more easily acted upon than others, especially the posterior columns, the pyramidal tracts and the direct cerebellar tracts. In other words, less strain can be put upon these tracts than upon many of the others. Tabes, a disease in which the posterior columns are degenerated, may be initiated to disease by lack of compensation or repair in this part of the nervous system, on being subject to injurious influences.

Soury in a recent review of the pathogenesis of tabes says, "Tabes appears to be a general degeneration of the nervous system: peripheral nerves, spinal cord, brain, which may be successively or simultaneously affected, varying with the pathogenic cause and the congenital or acquired resistance of the different provinces of the neuraxons." This does not seem to me at all what tabes is. Because changes of variable and slight degree are found in different parts of the nervous system this is no reason for concluding that such findings are part of the disease and that they are incidental.

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**The Photography of the Eye-grounds of Animals.**—A large number of photographs of the retina of various animals was obtained by W. NIKOLAEW (Pflüger's Archiv f. Physiol., Vol. 93, Nos. 11 and 12). The photographs were obtained from real inverted images of the retina, and present the latter therefore in the erect image. This method is of practical value in the laboratory. The author was the first to obtain photographs of the mammalian retina which show the changes in the retinal vessels under the influence of amyl nitrite, strychnine, chloroform, ergotin and other drugs, and the first to notice changes in the color of the eye-ground under the influence of amyl nitrite and chloroform.

## THE PROPER RECOGNITION OF ELECTROTHERAPEUTICS.*

BY A. R. RAINEAR, A.M., M.D.,

OF PHILADELPHIA, PA.

THE most wonderful discoveries and applications that marked the closing era of the last century, were the work and results of modern electricians. Indeed, the most marvelous achievement within the last decade, is that of the discovery of Professor Roentgen.

Where electricity was formerly used empirically, we are now able to study its actions as based upon certain well-known laws and principles, so that the fields of electrochemistry, electromechanics, and electrotherapy, can be delved into with a proper knowledge and distinguishing rule of guidance.

Electricity has even shown its wonderful action and quasi-natural force in restoring to life and hastening the growth of the surroundings of the agriculturalist and botanist. On the other hand, it is the complete destroyer of most all forms of life, by an instantaneous or slow death. It is able by cataphoresis and electrolysis, to destroy certain structures abnormal in growth and location, without impairing the functions of the adjacent tissues. With the X-ray we can undermine and destroy certain malignant growths that may be superficial or even deep-seated, while our field of diagnosis has been greatly enlarged through this new electrical penetration.

Electricity, the great potential of vibratory force, the wonderful synergist to the metallurgist, jumping from the anode to the cathode, and from the negative to the positive, is the essential force in combating certain diseases which are specially adapted to the treatment at the hands of the electroptherapist.

With all the data and facts bearing upon electrotherapy and electrical diagnosis, there are still a large number of "medical pessimists" who insist upon a complete effacement of electrotherapeutics from the college curriculum, but might allow one page of the materia medica to refer to this subject.

It is undoubtedly true, that electrical applications by some physicians, are valueless, while others may reach a favorable result. Only those who have taken up this great line of electrical study and research should apply this form of treatment to disease.

Electrotherapeutics is a department of therapy that admits of much enlargement and advancement; and to-day the electrotherapists are alert to their work, demonstrating to the medical profession as well as to the public, what this branch of treatment is capable of doing.

Some years ago, it was the writer's privilege to have charge of the electrical department of the Jefferson Hospital. At that time there was no practical method of teaching this form of therapy to the college students. Through the incessant work and pleadings of Professor Roberts Bartholow, and also some personal expense, the trustees finally apportioned a small division of one of the smallest rooms for this work. I think the room possibly would accommodate the patient, one student and the demonstrator. The galvanic apparatus (quite a crude affair) was placed on the wall, and a cheap portable faradic battery constituted the outfit. However embryonic this new department was, yet it was such an advancement over previous methods as to warrant its gradual enlargement. Such was the beginning of practical electrotherapeutics at the Jefferson Hospital; and the medical profession of Philadelphia at least, are indebted to Dr. Bartholow for his thorough lectures in electrotherapy, and the added hospital department for practical demonstrations.

Since this inauguration at the Jefferson, other medical schools have adopted this plan of electrical teaching; but until the college curriculum, either in the regular or post-graduate course adopts the study of electrotherapeutics, the graduate will depart from his alma mater with an incomplete armamentarium for his life-work in the treatment of disease.

Charlatans and quacks have availed themselves of electricity in its application to disease, and to-day are harvesting the returns that should properly belong to the legitimate practitioner. The quack realizes the value of electricity, but is limited to the methods of scientific application, and is, therefore, only successful in a small percentage of cases treated. Let the regular graduate in medicine receive a full course of lectures and have the practical applications in electrotherapy shown him, then will he know what class of cases to treat, and be able to show a successful line of treatment.

The future must show the physician as familiar with electricity, as he is with the hot and cold douche; counter-irritants; physical exercises; thermotherapy, and hydrotherapy. High potential currents, and electrolysis with the galvanic current, and the use of the high tension coils in faradism, will all be recognized as powerful therapeutic measures.

The study of neurology involves a fairly good knowledge of electricity, as the greater percentage of neurotic conditions and neuromuscular ailments are amenable to some forms of electrical treatment. It maintains the nutrition of paralyzed muscles while the nerve is undergoing repair. It also relieves muscular pain and spasm, and promotes the general nutrition of the body, more specially the neuromuscular system. In severe cases of trigeminal, intercostal, brachial, and sciatic neuralgias, and in some other forms of severe pain, nothing in the materia medica will prove of such benefit without ill effects as the proper application of electricity.

Despite the fact that some surgeons and gynecologists have tried to obliterate from existence electrotherapeutics, and have repeatedly declared this form of treatment dead, yet it is still alive and doing very much good. There are some electrical extremists and enthusiasts whose claims have injured and probably retarded its position on the roster of therapeutics. The exaggerated claims of its substitution for nearly all diseases are certainly unfounded and false. Although electricity has been used in the treatment of disease for over one hundred and fifty years, and the obscurity attendant upon these early treatments has never been unfolded, yet the achievements and advances made in apparatus and technic within the last twenty years, has enabled us to progress rapidly in electrical therapy.

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* Read before North Branch Philadelphia County Medical Society.

The study of electrotherapeutics should command the most serious thought and consideration of the medical college teacher, and also the entire medical profession. No longer should any doubt exist as to the permanent results of this form of therapy. It is a form of treatment in which the therapeutical results are recognized by the electrotherapist, similar to the pharmacologist in his study of the actions of various drugs on the body. We know the differences in the physiological effects, when the various forms of electricity are used. In using the galvanic current, the conditions are markedly changed in the application of the positive and negative poles. It may also act as a tonic, sedative, stimulant, and caustic, and can be used to force medicaments into the organs and tissues, when the stomach could not retain any form of drug.

In that great class of spastic conditions; paresis; paraplegias and hemiplegias; the numerous forms of spinal conditions, involving the cord and its membranes, and the motor and sensory nerves leading therefrom. In the atrophy of the muscles following a neuritis or cerebral pressure; in all these conditions, no method of treatment is equal to that of faradism and galvano-faradism; imparting a passive exercise to the muscle, and a stimulating tonic effect to the individual nerve that supplies the parts involved. In certain peripheral disorders of the motor and sensory nerves, where we have paralyses of sensation or motion or both, no therapy has its equivalent to the proper electrical application, nor will any drug or form of medication restore the atrophied muscles and degenerated nerves to their normal condition.

Realizing the important position that electricity holds as a therapeutical agent, it should certainly receive such recognition as to command more that a casual retrospect from the college professor in his lectures on therapeutics; and a practical demonstration should be given at the clinics of the hospital.

The greater portion of the practising physicians to-day, are totally ignorant as to the actions of electricity, its various forms and dosage. They know nothing about the apparatus and styles of electrodes. Almost daily am I able to witness the lack of knowledge as exhibited by the profession, in electricity. They know nothing of the galvanic, faradic, sinusoidal and static currents; while the ohm, milliampere, rheostat and volt, are terms which seem to be foreign to them. Quite often has the physician been prompted to use electricity in his practice, and he at once purchases a small faradic battery, which he applies to the patient until the sufferer writhes from the pain produced, which seems to be the signal then to discontinue treatment until the next seance. This goes on for some weeks, the patient not improving, and the physician finally gives up the case, saying "electricity is useless."

A professor in a western medical college states "that in treating a case of choroiditis with faradism, he gave her the positive pole, from five to eight cells, in each eye, for five minutes daily, through a wet sponge, which was followed by great improvement." If this physician used eight cells and a coil, then one of three things was the resultant quantity: (1) The cells were exexhausted; (2) the coil was a poor one; (3) or the patient's eyesight was destroyed. He further states: "I don't think we understand as much about electricity as we should; in galvanism, one pole is negative and the other less so, while in faradism, one pole is positive and the other less so." "That," he says, "is the difference in the two kinds of electricity."

The following dialogue usually is heard in the store where electrical apparatus are sold: The physician—"I want to get a battery." Salesman—"What kind of a battery?" Physician—"Oh, most any good kind; I think one of them that buzzes when you start it." Salesman—"You mean a faradic battery?" Physician—"Yes, I guess that's it, and give me a pair of sponges and cords I see them use!" He makes his purchase and departs, feeling that he is equipped for electrical work.

Thousands of batteries are sold by the various manufacturers; and many of the profession who buy them are utterly ignorant of the principles of construction, and equally so of the indications for their use. It is quite uncommon to meet a practitioner (except a neurologist) who understands electrophysics, and important facts relating to the uses for which special forms of batteries are best adapted.

Dr. de Watteville said, ten years ago, "the absence of any theoretical and practical teaching in our medical schools prevents electricity from becoming really popular with the medical profession." At the present time, the general practitioner, as well as the electrical specialist, in order to be a good therapeutist, must realize the wide range of adaptability of electricity to the treatment of disease. Therefore, the curriculum of all high-grade medical colleges, should have a department of electrotherapeutics. The students must be taught the physics of electricity and magnetism. The action of electricity on the dead and living tissues. They must know the prominent motor points of the various muscles, and understand the reactions of degeneration.

The physician of to-day should be able to point out such diseases that are better adapted to electrical treatment. He must know that strictures and growths are removable by electrolysis. The forcing of medicaments into the tissues by means of the galvanic current, called cataphoresis, is a permanent means of medication, and must be taught the coming practitioner.

As the accidents occurring constantly in the cities are on the increase, lawsuits and damages compel the electrical specialist to give testimony as to the temporary or permanent condition of the injury. With the proper appliances, we are able to determine the existence, the increase or decrease of pathological excitability, and in differentiating between central and peripheral lesions, as well as the detection of simulation. We are able to see the differences between true organic pains and those of hysteria, and by means of the reactions of degeneration, can give a prognosis that is reliable.

Twenty years ago, electrotherapy was held in very low estimation by most medical men, and reported cures were received with an incredulous smile. The present time demands a proper recognition and able teachers and instructors will be necessary for imparting scientific electrotherapy to the students studying for the medical doctorate.

The physiological actions of the different forms of electricity are being more thoroughly studied than ever before, and consequently their place in therapeutics is becoming more defined and considerably enlarged. This advancement has been productive of two national electrotherapeutical societies which meet annually; and the State medical societies will soon be forced to annex this electrical department.

These statements are undeniable, and are a source of gratification to those who have labored in this branch of therapy; and the time is fast approaching when the sphere of practical usefulness of this powerful agent will be even further extended.

Since the introduction of radiotherapy, an accumulation of new facts showing the beneficial results which may be obtained by a judicious application to malignant growths, has opened a wide territory for original work in electrotherapeutics.

As we become more intimate with the apparatus controlling this electrical power, and this knowledge aiding and improving electrical application, then will the department of electrotherapeutics reach its highest plane, and all the medical profession will be compelled to note the true recognition of electrotherapy.

2024 Diamond Street.

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**Traumatic Syringomyelia.**—A unique case in which there were sensory disturbances of one limb, with trophic changes in the subcutaneous tissues, is reported by A Gordon (Phil. Med. Jour., May 9, 1903). The patient sustained a fall on her back and within a short time developed sensory and trophic disturbances which were limited to the left upper extremity and side of the head. The peculiarity of the case consists in the fact that the symptoms were unilateral and limited, and in the fact that the trophic changes of the subcutaneous tissues cover the entire affected extremity. The latter condition makes the case unique, as all the cases reported with similar conditions presented trophic disturbances only of one portion of a limb.

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# A CONTRIBUTION TO THE PATHOLOGY AND PROGNOSIS OF THE DISEASES OF THE BLADDER.

BY ROBERT HOLMES GREENE, A.M., M.D.,
OF NEW YORK;
GENITO-URINARY SURGEON TO THE CITY (CHARITY) AND FRENCH HOSPITALS, NEW YORK CITY;
AND
HARLOW BROOKS, M.D.,
OF NEW YORK;
ASSISTANT PROFESSOR OF PATHOLOGY, UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE; CURATOR TO BELLEVUE HOSPITAL, FOURTH DIVISION; PATHOLOGIST TO MONTEFIORE HOSPITAL; PATHOLOGIST TO HARLEM HOSPITAL.

Following the general trend of our previous work,* this paper comes as a natural sequence of our former studies on the prostate. In this, our first contribution on the bladder, it is designed to outline the general character of the lesions of the bladder and the frequency of their appearance. As in our paper a year ago, we will in this give a brief résumé of some of the more serious work on the subject that has recently been published, describe what we have done and give our conclusions. It is probably true that an increased adaptability on the part of the profession to diagnose diseases of the central nervous system is responsible for the fact that many diseases of the bladder can now be attributed to some lesion there, which a few years ago would have been considered as commencing in the bladder itself. Still it is not even now so very uncommon for cases of locomotor ataxia to be wrongly diagnosed as bladder disease, and it is still more common to err in cases of myelitis with its increased reflexes. Albaran has recently reported three cases of bladder weakness due to syringomyelia, while the causative part played by neurasthenia in causing urinary disturbance is familiar to you all. Still, judging from our work, the important part played by the nervous system as the cause of bladder disease is even now underrated. Some necropsical evidence which we will present supports this statement. It is generally known, of course, that weak muscles are conducive to bladder disturbance, but accurate measurements of the amount of muscular tissue in the bladder walls have only been undertaken within comparatively recent times, and while we are all more or less familiar with the use of the cystoscope, careful cystoscopic examinations of the mucous membrane of the bladder before and after prostatectomies and similar operations have been almost entirely neglected, and the part which the condition of the bladder must necessarily play in the prognosis of such operations has been omitted.

The most important pathological work which has recently been done on the bladder is the work done by Halle and Motz.† They examined one-hundred bladders with non-tuberculous cystitis. These they divided into three classes. Those consisting of chronic cystitis pure, in which chronic inflammation alone was responsible for the lesion; second, cystitis chronic complex, in which a chronic inflammation takes place on the walls previously modified by the action of various mechanical causes; third, degeneration of the bladder wall through a cause undertermined.

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* Observations on the Prostate, 1896; Fallacies in the Treatment of Urethral Diseases, 1901; Nature of Prostatic Hypertrophy, 1902.

† Annales maladies des organes genito urinaires, Paris, 1902. Anatomie pathologique de la vessie.

Class first, chronic cystitis pure they found in 12 cases. Of these 5 were women, although in the hundred cases examined by them the proportion of women was much larger.

Women, according to them more often have simple chronic cystitis than men. In all such cases the capacity of the bladder was diminished. There was connective tissue increase, the walls were invariably thickened and the inflammation was a general one. Some of these simple cystitis cases had excoriations of the mucous membrane, some had undergone a villous transformation and some had presented cystic degenerations, some had leucoplastic plaques.

Of the second class 26 cases were complicated by stricture. Some of the bladders were dilated in these cases, some were not. The greater part of the inflammation in these stricture cases seemed to be confined to the back of the bladder. In these cases, while cystitis was present, at the same time the trabeculæ were not very much thickened in cases of men under fifty years old. There were 49 cases of cystitis associated with prostatic hypertrophy. In these the capacity of the bladder in 30 cases was increased, in 10 cases it was normal, 9 times it was diminished. The condition of the wall in these 49 cases was as follows:

Thickened in 32, thinner in 11 and 6 times it was of normal thickness. Those in which the walls were the thinnest were, generally speaking, those in which the dilatation of the bladder was the greatest. In some of these prostatic cases there was a tendency to inflammation in the upper part of the bladder wall and the walls had a tendency to thicken on the upper border. "We are probably most of us familiar with this condition, the writer saw a case within the past few days of an enormously dilated bladder with large prostate, in which the thickening was so pronounced in the upper wall of the bladder, that it has been diagnosed as abdominal tumor." In 34 of these 49 cases the trabeculæ of the bladder were much thickened. Halle and Motz found in 37 of the 49 cases of bladder inflammation with prostatic hypertrophy deep lesions of the mucous membrane. In 11 cases less profound lesions of cystitis and in 5 cases interstitial abscesses of the mucosa, showing a recent sharp infection. In 16 cases vegetation of the mucosa was present and in 10 cases it was absent, the mucosa tumefied and irregularly presented extreme vascular dilatations which gave an angeomatous aspect."

They also found in this class, and this is very interesting, it seems to us, confirming the views of the nature of prostatic hypertrophy, read before you last year, 10 cases of "prostatics without a prostate," that is the prostates were atrophied while the whole appearance of the bladder resembled those in whom the prostate was hypertrophied.

We might recall here that work previously done by others and ourselves have shown that prostatic atrophy was, like hypertrophy, often due to inflammation.

Ciencanowski in his book Prostatic Hypertrophy and Allied Conditions of the Bladder and the Kidneys (published by E. R. Pelton, New York, 1903), made most careful and exhaustive examinations of the bladder walls, and has made most accurate and painstaking measurements by a system which he devised, of the amount of muscular tissue present in the normal bladder, the amount of connective tissue and the differences in the proportion of the two, which might arise from various causes. He used for the purpose of his examinations, the diseased bladders of 40 old men, 19 of whom had prostatic hypertrophy, the bladders of 5 old women and for comparison the normal bladders of 11 young men.

He found where the muscular tissue became less or the connected tissue more, that the same result happened. For instance in some of his cases where he had clinical histories of the patient during life the necropsical examination seemed to show no diseased condition of the bladder, but there was great general muscular weakness of the individual and on careful examination of the bladder wall a great diminution in the amount of muscular structure was found, the clinical histories of these cases had been that they had suffered during life from much bladder disturbance. He found as a rule, to which there were exceptions, that increase in age meant diminution in the muscular construction of the bladder, that in young men three-quarters of the bladder wall was made up of muscular structure, that in old men this was reduced to two-thirds and sometimes one-half. He found of course that the presence of an obstruction to urinary outflow increased bladder weakness. He found, as did Halle and Motz, the arteriosclerosis played no part in the causation of bladder disturbance. He found in 16 out of 18 cases of prostatic hypertrophy there was hypertrophy of the bladder wall. In two such cases the bladder walls were thinner than usual. The capacity of the bladder he found pretty generally increased with prostatics and in a certain number of cases he found a compensating muscular hypertrophy had taken place, which evidently helped out the individual, unless it was overcome by an increase in the connective tissue due to inflammation. He found in his cases of prostatic hypertrophy no bladder insufficiency when the components of the bladder wall remained normal or within physiological limits, and states that this may happen when the prostatic enlargement is small, or the changes due to age has not effected the bladder wall, but if the prostatic hypertrophy is large, of the muscular tissue is diminished, then bladder disturbances immediately ensue. The three factors to be taken into consideration in prognosis of bladder disease are as he discovered from his measurements and careful histological examinations; first, the presence of inflammation causing an increase in the connective tissue growth; second, the thinning of the normal muscle structure due to age or weakness, and third, the presence and nature of urinary obstruction. These three factors are all interchangeable one with the other and should be so considered.

The necropsical evidence which we have to offer is as follows:

For the purpose of determining the frequency of bladder disease as it occurs in general hospital practice we have studied our records of 500 consecutive autopsies. The cases on which these observations have been made are taken from the pathological services of the Fourth Division of Bellevue Hospital, the Hood Wright Hospital, Harlem Hospital and the Montefiore Hospital for Chronic Diseases. Hence it appears that they represent very fairly the percentage of bladder lesions as found in a large general hospital service.

Of the 500 consecutive cases, 107 showed marked bladder lesions. This number, while surprisingly large, by no means includes all cases exhibiting bladder disease, for we have excluded from the list all minor lesions.

The most frequent lesion found was that of great dilation, present as an acute condition and without other abnormality, except those immediately consequent upon the dilation. Bladders dilated to less than 1,000 c.c. are not included in this list. Sixty-four of the 107 cases presented this lesion. In 27 of these cases it was produced in the coma of alcoholism 5 times, in that of nephritis 5 times, septic meningitis 3 cases, cerebrospinal meningitis 2 cases, sepsis, gas-poisoning and the like.

The majority of these lesions were induced when the patient was unconscious and perhaps in a moribund condition, but the serious results sometimes following it show the great importance of the liberal use of the catheter in all cases in which coma intervenes. The frequency with which grave lesions follow this condition is perhaps best appreciated when we consider that one of the 4 cases of rupture of the bladder occurred without traumatism in a case of this kind. Two cases of acute cystitis were caused by this distention and five of the eight cases of chronic cystitis with great dilatation also followed from causes of this nature.

Forty-three of all the cases observed were produced in comatose conditions, and in many others this factor was also doubtless contributive or causative. Nine of the cases of coma were of alcoholic origin. Cerebrospinal meningitis, septic meningitis, tubercular meningitis and cerebral hemorrhage follow with four cases each.

Where death does not immediately follow, the pathological changes induced in the bladder-wall by great distention are often of the most serious type. The dilatation serves to separate and tear apart the muscular walls and to produce a virtual acute muscular incompetence. This is later accompanied by the formation of hyperplastic connective tissue and the permanent introduction of cicatricial tissue into the walls of the viscus, giving rise to serious functional disability. Frequently the epithelial lining of the viscus is also broken, favoring the extravasation of urine and the production of cystitis or even more serious disease.

The alteration which the inhibition of cerebral control produces are almost identically simulated by spinal diseases of various kinds, thus eight of the 107 cases were produced by various spinal diseases. It is, therefore, equally important to supervise the bladder functions carefully in diseases of this class.

Twenty-two of our cases showed acute cystitis. The cause of these varied considerably. In five instances it was sepsis, but whether the cystitis was primary or secondary in these cases can not be definitely stated. Four developed in the course of syphilis, three from salpingitis, three from acute gonorrhea and the other instances from various infectious processes or from the previously considered overdistention. We believe it to be true as the statistics of others would tend to demonstrate that simple cystitis is more common in women than men and believe one cause of it to be that through habit they are more apt to allow their bladders to become overdistended than men. Clinical experience would seem to show the necessity of their medical advisers warning workingwomen particularly of this fault. Syphilis as a cause of bladder disease is also coming more into prominence than in the past. From the evidence above, from the fact that more cases due to it are being recorded and from clinical experience, we believe it will often be found the cause when looked for in cases of an origin at all doubtful.

Chronic ulcerative cystitis with thickening of the bladder wall was found in eight instances. Two of these resulted from enlargement of the prostate with infection, one from chronic gonorrhea and two from lesions of the spinal cord.

One of the most frequent diseases is contraction with great thickening of the bladder wall, 15 of these instances were found. The most common cause of this condition in our cases appears to be hypertrophy of the prostate of which 5 examples were found in the 15. Our statistics differ here from those of Ciencanowski and also those of Halle and Motz as to the causative factor of this lesion.

Concerning the nature of this lesion nothing definite can be said until it is ascertained to what the thickening of the bladder wall is due. This matter we propose to discuss later after we have detailed the results of the examination of the sections taken from the walls of such bladders. After the hypertrophy of the prostate the factors concerned in thickening and contraction of the bladder walls, seem to be old inflammatory processes of various natures for the greater part.

Twelve of the 107 cases show, in the gross specimen, hypertrophy of the wall with dilatation. Four of these twelve were apparently caused by prostatic hypertrophy, two resulted from stricture of the membranous urethra, two from long-standing alcoholism and two from chronic myelitis.

It appears that the most frequent cause of both thickening with contracture and thickening with dilatation of the bladder wall is hypertrophy of the prostate, and it therefore seems necessary that we discuss here, when this condition causes hypertrophy with dilation and when hypertrophy with contraction. From the fact that nine of the fifteen cases caused by prostatic hypertrophy were characterized by one or the other of these lesions, it appears that these are the most frequent changes which are produced in the bladder by prostatic hypertrophy. Our theory is that when the prostatic hypertrophy through rapid development produces obstruction to the flow of the urine, dilatation ensues at once and is probably accompanied by a production within the walls of the bladder of hyperplastic connective tissue, partly in an attempt at compensation and partly as the result of a mechanical inflammation due to distention. Secondary cystitis is then likely to develop, hence examination of the bladder-walls in these cases should show, if our theory be correct, an increase in the connective tissue elements, accompanied, in many cases, with more or less inflammatory exudate. When, however, the hypertrophy of the prostate is slow and the obstruction to the flow of urine correspondingly slowly developed, we should look for a hyperplasia of the muscle of the bladder walls, accompanied by slight, if any, inflammatory reaction, either in the production of an exudate or marked interstitial hyperplasia. We believe that this reasoning is borne out by the findings which we record later in this paper. The assumption is also substantiated by the fact that of our four cases of active prostatitis all save one caused great dilation with cystitis and consequent thickening of the wall.

We believe that we present a somewhat remarkable percentage of cases of rupture of the bladder for we have four cases occurring among the 107 of bladder disease, collected from 500 consecutive post-mortem examinations. Two of these cases occurred in the great dilatation incident to alcoholism, complicated with the infliction of a blow. One resulted in a case, of which we have no history, from causes unknown, one during a drinking bout, associated with hypertrophy of the prostate. The prostatic hypertrophy in this particular case was undoubtedly of subacute origin and gonorrheal in character.

Four cases of neoplasm of the bladder are included in our table. Of these one was primary carcinoma, one secondary carcinoma, which originated in the uterus, one a small round-cell sarcoma and one primary papilloma. Of course, for reasons specified in our previous paper, we have not counted those instances of so-called "adenoma of the prostate" as among these new growths.

In this tabulation of cases we have endeavored, in so far as possible, to include what appears to us the more important and frequent diseases of the bladder, particularly as found occurring in the course of, or complicating, general diseases. We have attempted to classify the lesions as sharply as possible so that a case should not appear, commonly at least, under two heads. This has necessarily resulted in flaws of exact definition in some instances, for you all understand how impossible it is to place under one heading the often complicated lesions found in a seriously diseased viscus. We have therefore classified under the head of chief lesions where subclassification was not possible.

It is our hope to study each of these lesions carefully, this, therefore, entails a careful clinical and microscopic study of each of the conditions named. Such a study must necessarily be a long one and would extend far beyond the possible limits of a single paper. We therefore present to you this very general résumé of the entire subject as a preliminary communication, indicating the lines along which we expect to work.

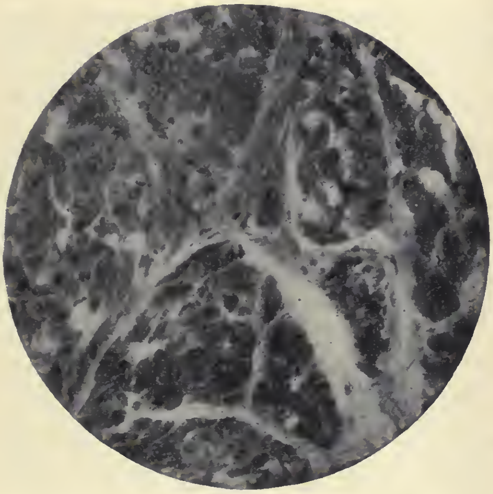
We have decided to consider first the condition of thickening of the bladder wall, since we believe this to be one of the most important lesions of the bladder, at least from a clinical standpoint. We regret that we are unable to present to you but nine cases of this condition, which have been studied microscopically, but we feel fairly sure that even this limited number of cases tends to demonstrate certain important facts in regard to hypertrophy of the bladder wall which we hope you will find of interest and, as we believe, of clinical value and significance.

*Microscopical Examination.*—Sections for examination were removed from two points in the bladder wall in each case. These sections were taken respectively 1 cm. from the apex of the fundus and 3 cm. from the trigone.

*Case 72* gave a history of long-standing suppurative nephritis probably of tuberculous origin. Bladder wall generally thickened varying from .5 to .7 cm. in thickness, thickening being most marked in lateral wall of bladder. Sacculation measuring .3 c m. just posterior to the trigone. Mucous membrane extensively infiltrated by pus cells and largely necrosed; submucosa in similar condition; no tubercles present; blood-vessels throughout all coats greatly conjested, walls of vessels moderately thickened. Inflammatory infiltration extends from mucous membrane into muscular coat. The connective tissue throughout the entire bladder wall is greatly augmented, the hyperplasia extends to both the intermuscular and the general connective tissue and is apparently entirely free from association with thickening of the blood-vessels. Many of the muscle cells are separated by a growth of the connective tissue not only about the funiculi, but also between the individual cells. Plasma cells are found abundantly wherever exudation is present. There is no apparent hypertrophy of the muscle and the thickening of the wall is entirely due to augmentation of the connective tissue.

*Case 82.*—Papilliferous growth from middle lobe of prostate occluding urethra. Bladder wall greatly thickened, measures from 1.2 to 2.1 cm. in thickness. Capacity of bladder not diminished and apparently not increased.

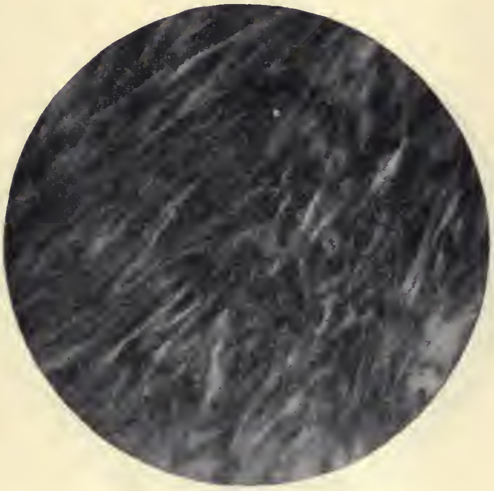
Plate 1.



Hyperplastic Smooth Muscle Fibers. Transverse Section. Case 82.

Mucous membrane largely macerated. Epithelium eroded in places. Submucosa infiltrated with small round cells, hyperplastic connective tissue cells, leucocytes and occasional plasma cells. Elastic connective tissue particularly abundant in submucosa and is apparently hyperplastic. General hyperplasia of entire interstitium of bladder-wall, involving particularly the yellow elastic fibers. The hypertrophy is continued from about the muscle bundles into the funiculi, separating the individual fibers in some places to a quite marked degree. The muscle cells show unmistakable evidences of true hyperplasia. They vary considerably in size, some are greatly enlarged of about the same size as in the uterus at full term. The nuclei of these muscle cells are often eccentric and the prickles show unusually well in some places. The blood vessels are moderately thickened throughout. They are moderately congested. In so far as can be determined from the sections there is no relation between the adventitia of the blood vessels and the general connective tissue hyperplasia.

Plate 2.

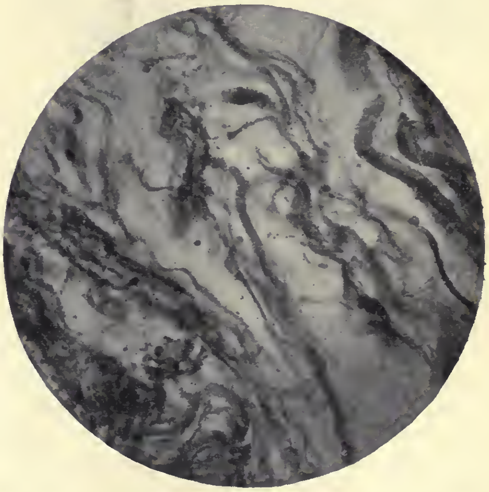


Hyperplastic Smooth Muscle Fibers. Longitudinal Section. Case 82.

*Case 85.*—There is stricture of membranous urethra; moderate hypertrophy of bladder wall, most marked in the inferior portions of the lateral wall. Walls measure from 1 to 15 cm. in thickness.

Epithelium of the mucous membrane is eroded in many places and there is a slight round cell infiltration of the submucosa. There is a very marked general hyperplasia of the interstitium throughout the muscular coats, also in submucosa and outer fibrous layers. This hyperplasia extends to the intercellular fibrils of the muscle bundles. The muscle cells vary in size from small to large. Many of them are obviously hypertrophied, but connective tissue increase is the most prominent feature of the sections.

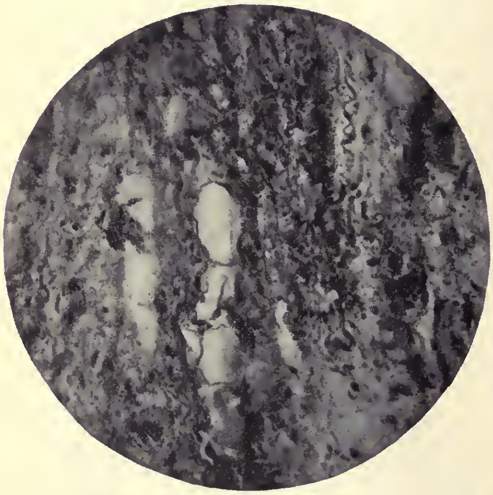
Plate 3.



Hyperplastic Connective Tissue in the Submucosa. Yellow Elastic Fibers Predominate. Case 92.

*Case 92.*—Great hypertrophy of the lateral lobes of the prostate with slight enlargement of the median lobe producing partial occlusion of the urethra. The bladder wall varies in thickness from 1 to 1.3 cm. Mucous membrane is intact for the greater part, but occasional small patches of erosion are met with. Submucosa is edematous and shows general connective tissue hyperplasia. Wandering connective tissue cells and plasma cells are quite abundant, but round cell infiltration is wanting. Hyperplastic yellow elastic fibers are very numerous. Moderate hypertrophy of general interstium, which does not however extend into the muscle funiculi. With a few exceptions, the muscle cells are of the usual size, but occasional bundles are found in which considerable actual increase in size of the cells is clearly present. The blood vessels throughout the bladder wall are moderately thickened but there is no apparent increase in the subendothelial coat and the vessels are not particularly congested.

Plate 4.



Marked Hyperplasia of Connective Tissue in the Submucosa. Case 111.

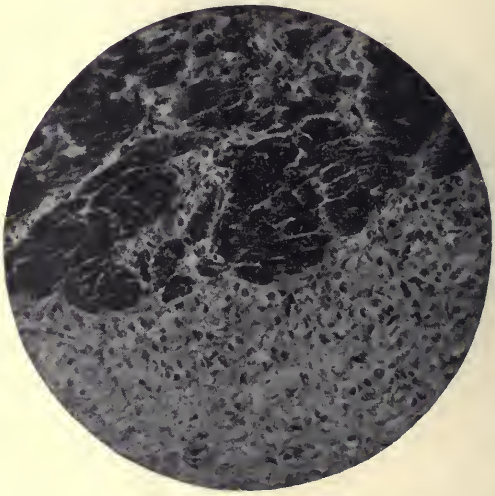
*Case 103.*—Hypertrophy of the middle lobe of the prostate, with moderate thickening of the wall and cystitis. Average thickness of bladder-wall .5 to .7 cm. Mucous membrane and submucosa infiltrated with inflammatory exudate which extends in lesser degree throughout the entire bladder wall. Connective tissue slightly increased. No apparent muscular hypertrophy. Thickening of wall is apparently mostly due to the presence of chronic inflammatory exudate. Blood vessels thickened and generally congested.

*Case 111.*—Rupture of bladder wall causing death from hemorrhage. Marked sacculation of wall at several points, apparently caused by hypertrophy of prostate which involves all portions of the gland and produces stenosis of the urethra. Bladder wall varies from 1.4 to 1.6 cm. in thickness. Mucous membrane shows an intact epithelial layer. Very marked hyperplasia of submucous connective tissue. General hyperplasia of connective tissue throughout entire bladder wall. Plasma cells and proliferating connective tissue cells are abundant in the stroma everywhere. The hyperplastic connective tissue fibrils are found separating individual muscle cells as well as bundles. Yellow elastic fibers are numerous. Many of the muscle cells are considerably hypertrophied, while others are atrophied apparently from the pressure exerted by the surrounding connective tissue. Blood vessels show markedly thickened walls, both adventitia and the subendothelial layers being hypertrophied. Vessels are moderately congested.

*Case 134.*—Hypertrophy of bladder wall apparently due to obstruction by the enlarged middle lobe of the prostate gland. Wall varies from .8 to 2 cm. in thickness. The inner surface shows heavy anastomosing muscular columns, which give the mucous surface a reticular appearance. Small sacculations lie between these prominent ridges. The epithelial layer of the mucous membrane is generally complete and thick. The submucous connective tissue is made up of a very compact layer of fibrous tissue of the adult type. Yellow elastic fibers are abundant. Plasma cells are numerous throughout the entire wall. The muscular coats show enormous increase in the amount of fibrous connective tissue, most of which is of the adult form. The muscle cells vary greatly in size, some of them being large while others are very small apparently from compression following overgrowth of the endomysium. Atrophied muscle fibers predominate. The blood vessels show a general thickening of their walls and are moderately congested.

*Case 138.*—Nodular new growths distributed over entire bladder wall, for the greater part covered by normal mucous membrane. New growths apparently carcinoma supposedly originating in the hypertrophied prostate. Slight stenosis of the urethra. Bladder walls vary in thickness from .5 to 2 cm. Submucous tissue almost completely replaced by growth of carcinomatous cells. Growth infiltrates muscular coat separating the funiculi and compressing the muscle cells causing atrophy in many areas. In the parts not involved by cancer the connective tissue hyperplasia is present, but in some places the proliferating connective tissue cells and fibers are separated by the infiltrating cells of the new growth. There is no apparent muscular hypertrophy. The

Plate 5.

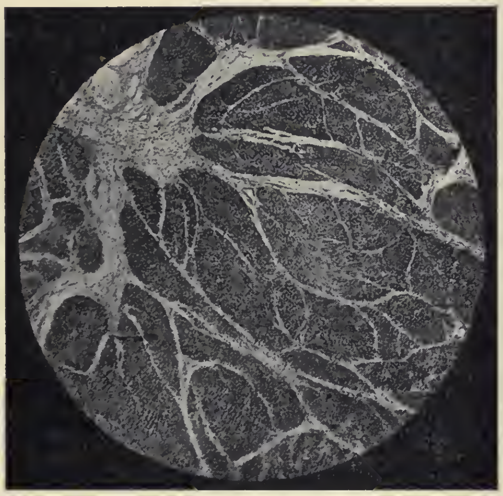


Atrophy and Replacement of Smooth Muscle by Cancer Cells. Carcinoma of Bladder. Case 138.

growth accounts for the major part of the hypertrophy of the bladder wall, but connective tissue hyperplasia also contributes.

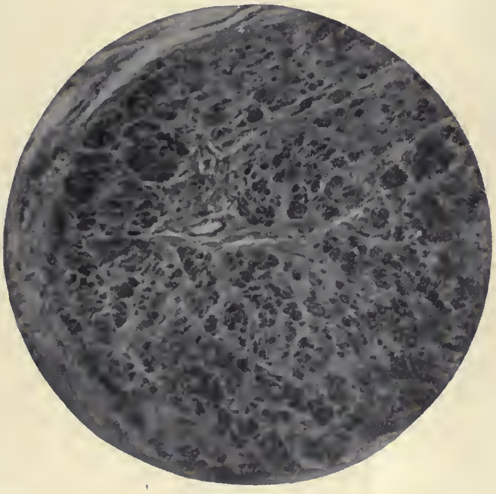
*Case 162.*—Hypertrophy of bladder wall apparently due to stricture of the membranous urethra. Wall varies from 1.3 to 1.2 cm. in thickness. Mucous membrane shows a normal epithelial layer. The submucosa is thickened and shows marked connective tissue hyperplasia; it is infiltrated by leucocytes, proliferating connective tissue, and plasma cells. The general connective tissue throughout the entire wall is thickened and some of the muscle bundles show almost complete replacement by the ingrowth of connective tissue which has produced very marked muscular atrophy. Some of the muscle bundles show occasional isolated hypertrophic muscle cells. The blood vessels are thickened and moderately congested.

Plate 6.



Muscular Atrophy Due to Interstitial Hyperplasia. Hyperplasia of the Diffuse Variety. Low magnification. Case 162.

Plate 7.



Diffuse Interstitial Hyperplasia with Atrophy of Muscle. Case 162.

From these nine cases it appears that hypertrophy of the bladder wall is due to various entirely different conditions. In so limited a series of observations we are not justified in very sweeping conclusions, but we deem it best to present them in the way of a preliminary contribution on a subject to which we expect to contribute more extensively later.

It thus appears that hypertrophy of the bladder wall, considering the term as simply meaning thickening of the bladder wall, may be due to the following conditions:

1. *Inflammatory Infiltration.*—Thickening of the bladder wall due to an inflammatory exudate either of a chronic or acute nature. This variety of hypertrophy must obviously be due to cystitis in the greater number of instances and the infiltrate may be edematous, hemorrhagic or purulent.

2. *Interstitial Hyperplasia.*—Due to increase in the connective tissue elements in the bladder wall, either of the submucosa, muscular or fibrous coats. The etiological factors involved in the production of this variety of hyperplasia are broadly of chronic inflammatory origin. If the process be most marked in the submucosa, it is generally due to the results of an inflammation primarily of the mucous membrane, that is a cystitis. If, however, the connective tissue hyperplasia be diffuse throughout the bladder wall it is more likely to be due to the results of too great distention, or from pressure, with a weakening of the bladder walls, and a consequent connective tissue hyperplasia in the nature of a compensatory process. It is also possible that connective tissue hyperplasia of the bladder wall may result as the sequence of a local or general arteriosclerosis, due to any cause whatsoever. This point is disputed by Halle and Motz, but we are not yet persuaded to their views on this point. Concerning the type of connective tissue hypertrophy it appears to us that the yellow elastic fibers play an important part in connective tissue hyperplasia of the bladder wall. This is, we believe, an original observation.

As a result of a primary connective tissue hyperplastic thickening of the bladder walls, atrophy of the muscle fibers must necessarily follow with a diminution of the expulsive power of the bladder. This variety might well be named "Bladder-wall hypertrophy" and, in contradistinction, the variety in which functional increase accompanies thickening of the wall, should then be called "Bladder-wall hyperplasia."

It is probable that this variety usually results in cases of obstruction of rather acute origin, or where overdistention of the bladder is permitted, both causing injury to the bladder walls without time being allowed for compensatory hypertrophy of the muscle of the viscus.

3. *Muscle Hyperplasia.*—It is denied by some writers that such a variety of hypertrophy of

the bladder walls exists. We believe that even the small series of cases observed by us proves that this is not only possible but that it is even common, perhaps one of the most common varieties of thickening. It is virtually a compensatory augmentation of the expulsive agents of the bladder wall and is doubtless found where slowly formed stenosis of the urinary outlet exists. It is possible that it follows in some cases the more acute obstructions but it doubtless is most frequently caused where the increase in pressure is slowly and gradually required as from slow hypertrophy of the prostate or obstruction of the urethra from any slowly developing cause.

It is obvious that, just as in the comparable condition of cardiac hypertrophy, that it may be, and frequently is, accompanied with connective tissue hyperplasia, or that, as in the mentioned condition, it may subsequently terminate in interstitial hyperplasia.

4. *Tumor Growth.*—The fourth variety of bladder-wall hypertrophy, is neopiastic, due to the infiltration of the walls of the bladder with the cells of a neoplasm. These neoplasms may be primary, secondary or metastatic. They may comprise any of the numerous neoplasms, but the most frequent are of course carcinomata, papillomata and sarcomata. The result of neoplasm of the bladder wall on the muscular tissue is, we believe, usually an atrophy and the ultimate replacement of the muscle by the tumor tissue.

Mixed types of these various varieties of bladder wall hypertrophy doubtless predominate as is shown in the plates accompanying this paper, and it is probably very rare that a pure type is found.

### CONCLUSIONS.

1. The most frequent cause of diseases of the bladder is: (*a*) Lesions of the central nervous system, causing dilation, (*b*) septic processes of various varieties, (*c*) hypertrophy of the prostate.

2. In all conditions in which the spinal cord or central nervous system is involved, frequent and early catheterizations should be resorted to, to prevent the bad effects of overdistention, or the possibility of cystic rupture.

3. Conditions of the bladder must greatly modify the prognosis in operative procedures for the relief of obstructions of the urinary flow, therefore the importance of cystoscopic and other examinations cannot be too strongly insisted upon.

4. Hypertrophy of the bladder wall is due to four different processes, separate or combined: (*a*) Inflammatory infiltration, (*b*) increase of the fibrous connected tissue, (*c*) smooth muscle hyperplasia, (*d*) infiltration by new growth, (*e*) the clinical symptoms in hypertrophy of the bladder depend on which of these factors predominate.

47 West Thirty-eighth Street.

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**Psychopathic Ward in Bellevue.**—The name of the Insane Pavilion at Bellevue has been changed to the more elegant and less repugnant Psychopathic Ward.

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## "IMPRESSIONS OF THE NON-HEREDITY OF ACQUIRED CHARACTERS." A REJOINDER.

BY LAWRENCE IRWELL, M.A., B.C.L.,

OF BUFFALO, N. Y.

UNDER the above heading the MEDICAL NEWS of December 20, 1902, contains a criticism of my article which was published in the NEWS of July 19, 1902. The writer, Dr. Blackwell, challenges the accuracy of almost everything that I assert, but he avoids reason and argument, substituting for them such expressions as "we would naturally infer and assume," and also the opinions of certain persons whom he regards as authorities.

It may safely be said that any man's capacity—or incapacity—for performing scientific work is shown by the methods which he chooses to employ. The investigation of the heredity or non-heredity of the results of use and disuse does not consist in making quotations from authors who have written that alcoholism is transmitted from parent to child, but who have failed to make any distinction between the congenital alcohol diathesis—a hereditary trait—and an acquired drinking habit, the result of association or imitation. Yet this method is Dr. Blackwell's chief stock in trade. It is not at all improbable that some of my critic's authorities, such as the Belgian Academy of Medicine and Dr. Sollier, of Paris, have never considered the difference between the two conditions. "Questions of inheritance," writes Dr. Adami (*British Medical Journal,* June, 1901), "occupy a curious position in the minds of medical men and in medical literature. To judge from the medical press, we medical men are very Gallois—we care for none of these things."

Dr. Blackwell disputes the truth of my assertion that "physicians are unwilling to make themselves familiar with the subject of heredity," and he tells his readers that "it is natural to assume that it has commanded as much attention as any other factor in etiology." In a scientific discussion it is not "natural to assume" very much. To do so is to adopt one of Dr. Blackwell's innovations. I am ready to prove what I wrote, which is corroborated by the statement of Dr. Adami, quoted above. Lectures devoted exclusively to heredity are not usually given in American medical colleges. Students in American medical colleges are not, as a rule, required to study any book on heredity. Having a few years ago asked a number of medical students some questions on general biology, I feel sure that these gentlemen, a representative class, did not know the meaning of Darwin's term, "Natural Selection." One student, who was about to graduate, defined the phrase as "the desire of individuals to become parents!" Treatises on heredity for physicians are not numerous. Medical publishers complain that such books do not sell well. Why? Because doctors do not care to read them. I am very sure that Dr. Blackwell has not studied the works of Weismann, Romanes, Mivart, Eimer—to mention only four—otherwise his paper would not have been written. But he may have all the recent works on pathology at his fingers' ends. On the subject of heredity, however, they contain extremely little, showing, I think, that it has not received equal attention with other factors in etiology.

After reading twice the first paragraph of the second column of page 1173, I am reluctantly forced to the conclusion that my opponent supposes that Jenner was the founder of "aseptic medication!" Even if this is not the impression which he intends to convey, the discoveries of Jenner and Lister are not very intimately connected with the problems of heredity.

Dr. Blackwell condemns as "irrelevant" my reference to Dr. Wolf's statement that out of 600 Jewish boys "two per cent. were born partially circumcised." Had he read what I wrote with ordinary care, he would have seen that Dr. Wolf was a witness on his side of the case. The facts are simply as follows: Dr. Talbot has written a book upon *Degeneration* in which he attempts to prove that acquired characters are transmitted. Part of his evidence consists of Dr. Wolf's experience with Jewish newly-born infants, which I wrote was "valueless." I gave my reasons.

As Dr. Blackwell appears to have little knowledge of neo-Lamarckism, he may be surprised to learn that the leading neo-Lamarckians claim that the blind fish found in caves are the progeny of fish that became blind by accident. To the neo-Lamarckian mind, therefore, the transmission of mutilations is not unreasonable. I refer my critic to the standard book of the late Professor Eimer, of Tübingen.

The introduction of the Almighty and Abraham does not seem to me to aid scientific investigation. I refuse to follow Dr. Blackwell's lead into the realms of theology.

I have repeatedly asserted that heredity does not involve the passing on from one generation to another of identical phenomena. For example, idiocy, insanity, chorea, etc., etc., may be transmuted in transmission into epilepsy. What is transmitted is simply "a depraved constitution." (I am unable to remember from what author I originally obtained this expression.)

Dr. Blackwell writes "As the tendency of spirit drinking is to induce . . . physical deterioration, we would naturally infer and assume that the acquired habit in one generation would induce the same degeneration in the next; and evolve a hereditary condition." I deny that we have any right to "infer and assume" anything of the sort. The truth in science is not found by gratuitous assumption, but by testing so-called facts by evidence). Although I attach little importance to authority as compared with reason, yet I feel justified in referring to an expression used by Huxley ("Life and Letters," Vol. II, p. 142), "The transmission of functional modifications . . . seems as far off support by trustworthy evidence now as ever it was." Dr. Blackwell's assumption appears to me especially unjustifiable in the face of the opinion of Huxley given (with a proper reference) in my former article.

I quite understand that an elaborate article on neo-Darwinism *versus* neo-Lamarckism could not be published in the MEDICAL NEWS, and on that account alone I confine my statement to a single example which is intended to be a partial refutation of what Dr. Blackwell says may be assumed. A vast number of other examples could be given. The most satisfactory instances are those which are unconnected with pathological conditions, for diatheses play an important part in heredity. The case which I am about to cite, however, has been chosen because it will interest physicians more than any case involving no abnormal features whatever. For many generations man has been a talking animal. His ancestors acquired the capacity to talk long ago. Its acquisition was, in all reasonable probability, due to Natural Selection acting upon a congenital variation. If a child very soon after birth meets with some accident which renders it unable to hear, that child, in the ordinary course of events, never learns to speak, because it is unable to hear, and consequently to imitate the speech of others. This proves that while congenital capacity to learn to talk may be hereditary, having originated and having been preserved by Natural Selection acting on fortuitous variations, as I have previously stated, yet the actual use of the vocal organs, a characteristic acquired a great many years since, is not transmitted, and each generation must learn the functions of the voice for itself. If this were not so, even congenital deafness would not be invariably accompanied by speechlessness when the organs of speech are normal.

According to Dr. Blackwell, the occurrence of atavism (he does not use that word, it is true, but writes that "heredity often overleaps one generation. . .") makes it difficult to say whether the alcohol habit is hereditary or acquired. It gives me great pleasure to agree with my critic upon one point. It *is* undoubtedly difficult to distinguish between an inebriate who was born with the alcohol diathesis and one who was not. But what of it? The remark is about as important as saying that disease often causes death.

Dr. Blackwell claims that "it is difficult to conceive of the existence of a congenital disease without recognizing its prenatal entity." I go much further. I say that it is impossible to conceive such a condition. Nobody has asked him to conceive anything so absurd as congenital disease that was not prenatal. He has not taken the trouble to read what Dr. Adami has written with the care which it deserves. Here are the distinguished pathologist's words: "The individual begins the moment that fecundation is accomplished, the moment the nuclear material of the spermatozoon fuses with the nuclear material of the ovum and these twain become one. Compared with this event, birth is seen to be of secondary importance, for the intra-uterine association of the embryo with the maternal tissues is but one means employed by a restricted number of species to insure the satisfactory nourishment of the individual during the earlier stages of development. The recognition of these facts is essential for any serious study of the problems of human inheritance. Any disturbance due to influence affecting the individual from without while *in utero* is *acquired.* It certainly must not be spoken of as inherited; it is an antenatal acquirement or is of *congenital* origin. That alone is inherited which is the property of the germ plasms from which he originates, or is produced by the interaction of those germ plasms." I should suppose that nothing could be any clearer in meaning than this. If, as Dr. Blackwell asserts, the average mind finds it difficult to follow this reasoning, then the average mind must represent a distinctly low order of intelligence. There can be little doubt that any physician can easily grasp the ideas which Dr. Adami wishes to impress. He was not, of course, writing for the laymen. Syphilis may, I believe, be conveyed by the placenta, and an infant may be syphilitic at birth. But this does not constitute hereditary syphilis; it is unquestionably congenital syphilis. I do not know of any case in which phthisis has been found in a newly-born child. This disease in very young children is, I understand, usually due to post-natal causes, such as kissing by a phthisical parent. If, however, any instance is on record of consumption in a child at birth, it would probably be one of the rare cases in which the micro-organisms were conveyed by the placenta, constituting, not hereditary transmission, but that infection of the germ-plasm which I have suggested elsewhere might be indicated by the word "spermiasm"—*σπερμα* = germ + *μιασμα* = stain. Even supposing that the ovum, or the microscopic spermatozoon could be proved to harbor pathogenic bacteria, it would simply show a similar condition, and would not indicate that micro-organic diseases were hereditary in the proper use of the term.

The argument which I used to show that the cumulative influence of alcohol upon the Jews would, if acquired alcoholism were hereditary, have wiped us (Jews) out long ago, is not applicable to the American nation, for the more than obvious reason that the American nation has not existed for innumerable generations, and has consequently not consumed alcohol for several hundred years. I do not profess to understand Dr. Blackwell's remarkable logic, and I repeat that if acquired alcoholism were hereditary, and any Jews were left upon the face of the globe, they would necessarily be terrible drunkards, having inherited the sum total of the drinking habits of many ancestors. The probability is, I am sure, that, were acquired alcoholism hereditary, the Jewish race would now be as extinct as the dodo, because every member of it would, many decades since, have died as a result of alcohol poisoning. There is a little doubt that excessive indulgence in alcoholic beverages tends to produce sterility in men. As to women, I do not find any positive statement by recognized authorities.

Dr. Blackwell's quotations, some of them without references for verification, are from writers who do not differentiate between acquired and congenital alcoholism. Dr. Crothers, as far as I have been able to ascertain, has not written one word to indicate that he has paid any special attention to the difference between a patient who has inherited the alcohol diathesis, and one who, without inheriting this trait, has become a drunkard through resorting with inebriates. I do not know of any physician who has devoted much time to ascertaining the *cause* of the disorder known as alcoholism in each patient.

In Darwin's earlier works there are a few instances in which he appears to have thought that acquired characters were hereditary. But Darwin died twenty years ago, and at that time the discussion of neo-Lamarckism had not been thrashed out. Indeed, it had hardly commenced. I believe that the late Mr. Romanes had talked with Mr. Darwin upon the subject, but the latter had not given it detailed examination, and no man can truthfully say that Charles Darwin has anywhere written that *acquired* alcoholism is hereditary.

Having now answered all of Dr. Blackwell's contentions, I beg leave, in order to make my meaning perfectly clear, to state the following points:

Neo-Darwinians and neo-Lamarckians agree that congenital characters are hereditary.

The alcohol diathesis is a congenital trait, and is undoubtedly transmitted. Unless my observation is at fault (I must once more repeat that I have had no medical education whatever), it is closely connected with the phthisical diathesis and the insane diathesis, both of which are markedly hereditary.

Speaking for myself alone, and possessing no right to speak for others, I have never asserted that acquired characters *cannot* be transmitted. I merely assert that there is at present no reliable evidence that any acquired trait is transmitted, and that, up to now, whenever an instance of the supposed inheritance of a functional modification has been properly investigated by competent observers in a scientific manner, the so-called "proof" has broken down.

## MEDICAL PROGRESS.

### NEUROLOGY AND PSYCHIATRY.

**The Etiology of Trembling.**—Pathology recognizes a number of muscular movements which are not voluntary and yet not reflex; which are transmitted along the tracts of voluntary movements, but do not obey the will; which like the will originate only during the hours of waking but do not serve any of the purposes of this period; which proceed with the same regularity as the physiological functions but are nevertheless not of a physiological nature. This class of movements is represented in a most typical manner by the act of trembling. In answer to the question as to the source of this movement, A. Adamkiewicz (Zeitsch. f. klin. Med., Vol. 48, Nos. 3 and 4) states every tremor is a disturbance of equilibrium. Trembling arises during waking hours only, like consciousness and volition, and disappears during sleep. We must assume that the act of trembling is not only the product of weakened power and increased tension of the muscular apparatus and may appear in a functional or organic form, but is also due to a double stimulus, one visible and the other invisible. It comes on either as an accompaniment of voluntary movement or spontaneously, as an independent phenomenon. In the first case the tremor accompanies every intended movement, whenever the system of pyramidal fibers is weakened and the muscles are under abnormal tension. Most text-books are therefore in error, when they state that an intentional tremor is only to be found in multiple sclerosis. Fright, fever, overexertion, exhaustion, weakness and poisoning, are all accompanied by trembling, whenever the individual who may happen to present these conditions attempts to use his muscles. All these cases are dependent on a single cause—the increase in muscular tension with a simultaneous diminished resistance in these organs. The condition may be compared to what takes place in a tense string or a steel rod, the vibrations being in exact proportion to the degree of tension or elasticity, and the weaker the latter may render the substance, the greater the ease with which the vibrations may be induced. As regards the spontaneous tremors, the author believes that it is entirely due to internal causes, and these are associated with the physiological conditions of the period of wakefulness. Sleep and waking physiologically considered, are nothing more than varying states assumed by the ganglion cells of the cerebral cortex. It follows that the cause of spontaneous tremors must lie in these cells, and as it only comes on during the period of waking, it is probably due to the same stimulus which incites the cortex to activity and stands in no relation to any psychical phenomenon. It is evident therefore that trembling is nothing more than a pathologically increased "tonus" (chronic contraction), which is kept up by an invisible stimulus.

**Relation of Alcoholism to Insanity.**—In a ten years' experience in the Insane Asylum of Castel d'Andorte, G. La Lanne (Jour. de Méd. de Bordeaux, April 5, 1903) has been impressed with the small number of cases in which alcoholism could be invoked as an etiological factor in insanity, this being the more surprising in a region in which the chief source of income is the vineyard and winepress. During the ten years (1891 to 1901) 318 patients were admitted to the asylum, for the treatment of various mental affections; and of this number but sixteen owed their malady to acute, subacute or chronic alcoholism, a proportion of 5.03 per cent.; this being practically the proportion noted by Régis in the same institution in the preceding twenty years (1871 to 1891). Hence the author concludes that the prevalence of alcoholism has not increased, at least in that region, during the ten years which this investigation covers.

**Paralysis Agitans Combined with Tabes.**—In this very interesting case both diseases were found in one patient. Dadds (Revista Critica di Clin. Med., No. 10, 1903) found the patient, who had for four years suffered from a classical form of tabes dorsalis with definite symptoms of Parkinson's disease; for the next four years both diseases, though found in one individual, showed their individual characteristic symptoms. An histological examination (patient succumbed to a cystitis of several months' duration) showed certain nerves, as the radial, median, sciatic, anterior tibial, etc., in a condition of perfect integrity; there was, however, atrophy of the posterior roots of the sacral, lumbar and inferior dorsal regions; thickening of the meninges especially posteriorly. There was also seen a typical degeneration of the posterior columns, and of the posterior gray substance. The muscles failed to show any notable changes. Besides the mentioned lesions none others were found that could possibly be accounted for by the diseases in question, and it thus becomes clear that both the affections ran their individual courses not only clinically but also pathologically. In this as in other cases there were found no alterations characteristic of Parkinson's disease. The author assumes that in all probability disturbance of the function of organs which pass through the cord in the posterior columns and suppression of the function of a great number of posterior roots exert no influence in the production of paralysis agitans. The fact that the pyramidal tracts were found entirely free from any changes leads us to surmise that these tracts as well as their centers of origin, in which there were demonstrated but slight lesions of recent date, cannot show any marked anatomical lesion which would correspond to the symptomatology of paralysis agitans.

**Nerve Suture and Nerve Degeneration.**—In a study on the subject of Nerve Suture and Nerve Degeneration, P. B. Henriksen (Lancet, April 11, 1903) says, considering the question of whether a degenerated nerve can be supposed to be to some extent conducting. This question may be solved in two ways, either by proving conducting elements in the degenerated nerve or by proving effects of the nerve function during the degeneration period. According to what has formerly been mentioned, the new fibers must be supposed to be formed of elements in the peripheral part of the nerve. What are these elements, and at what time can they be shown as continuing courses fit for conducting a nerve impulse? When a nerve is divided the weight of a corresponding muscle will diminish rapidly. By weighing the muscle twelve days after dividing one peroneal nerve of a rabbit it was found that the muscle corresponding to the divided nerve weighed 4.77 grams, while the muscle on the other side weighed 6.98 grams—a difference of 33 per cent. When the nerve united again motility comes earlier than the electrical reaction. In several of my experiments the difference seemed to be considerable, as the animals could use the operated limb almost as well as the other limb long before electrical reaction was observed. If the muscles have thus resumed their activity, and in consequence of a return of nerve conduction, one may suppose that this also may be shown by changes in the microscopical appearance of the muscles or in the cessation of atrophy or increasing weight. To examine these circumstances, the third series of experiments was made in the following way. The peroneal nerve was divided on both sides. On the one side one of the ends was pulled out through the slit in the fascia and fixed subcutaneously, while the slit for the rest was closed with catgut. In this way the nerve was prevented from uniting. On the other side the divided nerve was permitted to unite. The animals were killed with some days' interval, and both the united nerve and the central and peripheral end of the non-united nerve were hardened for microscopical examination. The muscles supplied by the peroneal nerve were carefully dissected out as similarly as possible on both sides and were then immediately weighed. Pieces of the muscles were cut out from corresponding places on both sides and hardened in formalin for microscopical examination.

**Hypnotics and Their Dangers.**—In a treatise on Some Dangers of Hypnotics, Nestor Tirard (Lancet, April 11, 1903) draws the following conclusions. He says that he is convinced that in the employment and in the selection of a hypnotic, the sleeplessness is perhaps the least important factor to be considered, although it may be the sole symptom of which complaint is made. The cause must be ascertained, together with any indications of idiosyncrasy. The coexistence of other diseases must influence the selection of the hypnotic, and even when, for the individual case, a suitable hypnotic has been found, risks of repeating moderate doses must be borne in mind. Generally the dose has to be gradually increased especially when the cause has not been ascertained or satisfactorily dealt with, but with some drugs, *e.g.,* sulphonal, trinol and tetronal, the danger appears to lie in the total quantity taken, even though each dose may have been small. But perhaps the greatest danger of all is incurred when the patient is given a prescription for a hypnotic and this danger has certain analogies with the medicinal employment of alcohol. Many of us believe that at the height of fever or in conditions of collapse, alcohol is often necessary, but it is never recommended to our patients for indefinite use, still less for increasing doses. Armed with a prescription for hypnotic patients commonly go on taking the drug long after the relief of the special circumstance for which it was prescribed, and the prescription may be used to facilitate the acquisition of large quantities of a dangerous drug obtained, perhaps, at several establishments in small amounts. Notwithstanding the relief which many have derived from the use of hypnotics, he is in favor of any step which tends to prevent their administration except by the medical man or under his immediate directions. He has seen so much of the dangers of hypnotics that he would prohibit their sale to the public or would allow them only to be dispensed to a freshly dated prescription, which should be retained by the druggist or returned to the prescriber.

**Nerve Implantation.**—In doing an extensive resection of bone necessitated by a suppurative ostitis following an otitis, KORTE (Deut. med. Woch., No. 17, 1903) found that the facial nerve interfered with the knife and had to be cut at its point of exit from the stylomastoid foramen. As it was impossible to unite the divided nerve ends to each other, he sutured the distal extremity of the facial to the hypoglossal nerve, the latter being more accessible than the spinal accessory, recommended by other operators. Subsequently there developed a complete paralysis in the domain of both nerves and a reaction of degeneration. After six months, electric response and active movements gradually returned. It was also noticed that movements of the facial muscles were accompanied at the same time by movements of the muscles of the tongue and vice versa. Because of these objections, the author advises against implantation into the twelfth nerve and recommends the employment of the eleventh nerve for this purpose as its functions are of less importance.

**Gastric Digestion in the Insane.**—The gastric digestion and especially the work of the gastric glands has been investigated on a series of insane by USCHENKO (Prak. Vrach, No. 9, 1903). The series embraces 25 insane patients, 3 melancholiacs, 2 maniacs, 2 suffering with catatonia, 1 with hysterical psychosis, 1 with neurasthenic psychosis, 1 acute hallucinatory psychosis, 6 general paralytics, and 9 with various forms of paranoia. He found that in melancholia there is no gastric digestion during the first hour after ingestion of food; later on the process of digestion starts up rather slowly and continues so for quite a long time. The gastric motility is thus evidently exaggerated in the insane. In one of the maniacs the first hour of gastric digestion was similar to that in melancholia, but later on the juice increased in quantity, the acidity became greater, and there appeared free HCl and peptone; in the other case there was a sufficient secretion of juice during the first hour, but the activity of the glands diminished considerably in 2½ hours. In both cases there was an increase in the motile ability of the stomach. In the hysterical psychosis as well as in the cases of catatonia there was absent the psychic period of digestion corresponding with the absence of appetite; in catatonia the digestive powers of the patient increased together with the general improvement. In the paralytics the gastric digestion was normal in the beginning, but gradually the quantity of the secreted juice began to diminish and the digestive process was interrupted, showing an asthemia of the nervo-glandular apparatus of the stomach. In the paranoiacs there was a sufficient gastric secretion during the first hour, and this continued so during the whole process of digestion.

## PHYSIOLOGY.

**The Anesthetic Action of Yohimbin.**—The effect of this drug on the mucous membranes and also on the sensory and motor nerve fibers has been made the subject of a series of animal experiments by A. LOEWY and F. MULLER (Münch. med. Woch., April 14, 1903). In comparison with cocaine they found that the two drugs varied from the quantitative standpoint, but qualitatively acted about the same. By direct application on motor and sensory nerves of the yohimbin, their power of conductivity was diminished and even stopped. Furthermore the application on the sensory nerve endings of the mucous membranes caused anesthesia. As with cocaine, this effect is only a temporary one and is succeeded by normal conditions. The practical value of this anesthetic is still in need of clinical tests. A series of similar experiments have also been made for determining the effect on the sympathetic system. Injections into the dural sac have been made and the action studied on the vasomotor distribution of various vascular areas. These observations are to be published at a later date.

**Protoplasm and Enzyme.**—That enzymes are not of a protoplasmic nature is maintained by T. BOKORNY (Pflüger's Archiv, Feb. 2, 1903). The experimental grounds for this conclusion are as follows: The assimilative capacity as well as the other functions of protoplasm is in certain fungi not diminished in the presence of a one-per-cent. mineral acid. Most enzymes cannot resist such a strong acid. Invertin is weakened by the action of one-per-cent. hydrochloric acid for twenty-four hours, while by this agent zymase is rendered inert. Some kinds of protoplasm are less sensitive to the action of alkalies than most enzymes. Thus certain bacteria grow in the presence of one per cent. of soda, while by this agent invertin is destroyed in a few days. There is no agent toxic to protoplasm which is not at the same time toxic to the enzymes, and the reverse is true. If an enzyme shows marked invulnerability at the ordinary temperature, it may still be destroyed by the use of 30 to 35 degrees of heat in addition to the toxin. Zymase stands next to protoplasm in regard to its power to resist destructive influences. The real truth as to the protoplasmic nature of the former can only be determined when the presence or absence of a definite structure in the enzyme is discovered. For this discovery there are no means at hand. The fact that certain influences destroy the activity both of protoplasm and enzyme, is insufficient to settle the problem. The fact that enzymes are soluble in water testifies against their protoplasmic nature, for protoplasm has never been made to enter into true solution. Still in the case of a solution, if this is a "micellar" one, organization, *i.e.,* definite specific grouping of the molecules, is possible.

**Absorption of Granular Materials from the Intestine.**—The question of how the absorption of granular materials, such as blood cells, desquamated epithelium and other detritus, takes place, has long been a matter of controversy. The presence of intracellular stomata is now disputed by several investigators. A very complete communication on this subject has just been made by W. G. McCallum (Bull. Johns Hopkins Hosp., May, 1903), who has made experiments for the purpose of determining the path taken by solid granules as they leave the peritoneum. It was first necessary to study in detail the tissues directly involved. This showed that the peritoneal cavity is lined by a complete layer of peculiar epithelial cells which lie on a basement membrane uniformly thin, except where it overlies the lymphatic lacunæ, in which position it is represented by a lattice work of fibrils separating the epithelium from the surface of the lymphatic. Approaching the peritoneum at these points are the oval sacs or lacunæ which are the absorbing terminals of the diaphragmatic lymphatics and which, while possessed of a complete lining of endothelium are separated from the peritoneal cavity only by the loosely woven connective tissue and the peritoneal epithelium. The three elements which can afford a certain obstruction to the progress of the absorbed material are the peritoneal epithelial layer, the basement membrane and the lining endothelium of the lymphatics. The author's experiments confirmed the idea that phagocytosis played a very important part in absorption from the peritoneum but also that the mechanical aspiration of granules through the lax cell membranes by the respiratory movement, is in addition possible. It does not seem probable that there exists any open communication between the peritoneum and the lymphatics, nor can the theory be upheld that the peritoneal cavity forms a part of the lymphatic system. Each of these cavities is lined with cells which retain their specificity throughout and nowhere merge into one another or into the adjacent connective tissue cells. This has been confirmed by embryological investigation. The individual cells in any of these membranes are separable by adequate force and the mechanical violence of the respiratory movements is sufficient to force fine granules between them.

**The Significance of Leucocytosis.**—The generally accepted definition of this term considers the condition to be one where there is an increase in the number of leucocytes in the peripheral blood over the number normal in the individual case, this increase never involving a diminution in the polymorphonuclear varieties, but a marked absolute and relative gain over the number previously present (Cabot). The experience of R. N. Wilson, (Jour. Am. Med. Ass'n, May 2, 1903), has led him to question the above definition and also to call attention to some other forms of leucocytosis. From his observations he believes that the term should include every increase in the absolute number of the leucocytes of the blood examined, as well as every increase in the percentage count of the various leucocytic forms. A leucocytosis, of whatever nature, must always be regarded as a clinical sign of importance, but never of such weight as to influence against equally convincing physical signs. A high percentage of the polymorphonuclear forms in the absence of an absolute leucocytosis indicates the presence of pus or of some grave inflammatory process, together with a low vitality of the patient. Specific factors may rarely exert such an unusual influence as to interfere with the customary reaction of the polymorphonuclear cells. Single counts of the leucocytes, or single estimates of the leucocytic percentages, are often misleading; while a persistent series of observations will seldom fail to aid in the diagnosis and treatment of the condition. A gradual but steady rise in the total count of leucocytes above the customary number usually indicates the presence of an active and augmenting and inflammatory influence. When this increase reaches large proportions it may be looked upon as an indication of the presence of an active leucocytic process, provided the clinical picture also bears out the suggestion.

## PEDIATRICS.

**Flatfoot in Infants and Children.**—This subject has received but little attention and the condition is often overlooked. R. W. Lovett (Jour. Am. Med. Ass'n, April 18, 1903) describes the condition in infants and children and offers suggestions for treatment. It is usually manifested in heavy infants who walk early, and especially if they have any grade of rickets present. They begin to tread on the inner border of the foot and the inner malleolus becomes more prominent than it should be. There is rarely pain present, but they walk with feet wide apart, with an unsteady gait, and trip easily. The foot remains perfectly flexible. Such children are not necessarily weak or debilitated, but are often robust and heavily built. The affection is invited by the bad shape of many children's shoes. Prescribing in these children the wearing of moccasins or ordering them to walk in their bare feet, seems unphysiological, because the weight comes on one foot less able to bear weight than if a proper boot is worn. Snugly fitting shoes are recommended with the inner edge of the sole and heel thicker than the outer edge by one-eighth to one-quarter of an inch. This causes the foot to slide down the inclined plane to the outer side of the boot. A more useful method is by means of a graduated pad of felt or soft leather incorporated in a thin inner sole, which raises the arch of the foot and holds it on its outer border. In older children the treatment does not differ essentially from that in adults, and plates are generally necessary. Two matters are essential,—the foot should be supported in a correct position and the child should be trained in the use of the muscles supporting the arch and should be drilled in correct standing. The prognosis in both infants and children is in general excellent as to complete recovery, but exercises must form an essential part of the treatment.

**Treatment of Infantile Convulsions.**—A number of essays have been written for the N. Y. Med. Jour., March 14 and 21, 1903, upon the best method of treating infantile convulsions. A. McMahan, who received the prize for such an essay, divides the treatment into four heads: (1) The treatment of the convulsion; (2) the removal of the exciting cause in the given case; (3) the prevention of any known cause acting again as an irritant, and (4) the strengthening of the infant's unstable nervous system. For the immediate relief of the convulsion he recommends a few whiffs of chloroform while the temperature is being taken and the history obtained. If the spasm is very severe or prolonged, morphine gr. $^{1}/_{20}$ may be used hypodermically or chloral 3 to 8 grains in four ounces of water, may be injected into the rectum. If the rectal temperature is below 104° F., a warm pack with ice to the head will be of benefit. If the temperature reaches 105° F. or 106° F. a cold or ice pack with ice to the head and at times heat to the feet will be required. The pack, cold or warm, will (1) reduce the pyrexia, (2) increase peripheral circulation, (3) lessen the rigidity, and (4), assist in elimination and also permit in cases of overeating and acute indigestion without much disturbance to the child, of the giving of stomach or intestinal lavage. Where lavage is impracticable syrup of ipecac, one dram. or apomorphine gr. $^{1}/_{40}$ to $^{1}/_{20}$ may be employed. If stimulation is required, whisky by rectum, strychnine and glonoin are the best. If there has been a loss of fluids, as in dysentery, saline infusions are beneficial and in the various intestinal disturbances high colon irrigations with saline solution give very good results. While the child is in the pack watch the temperature closely and remove when the temperature falls to 101° F., again applying it when necessary. The prevention of convulsions, because of their serious effects upon the child, becomes of the utmost importance and to remove all predisposing conditions one should (1) give proper food at proper intervals, (2) proper hygienic surroundings, (3) remove physical defects and abnormalities (adherent prepuce or clitoris, foreign bodies in the ears or nose, and adenoid growths in the pharynx, (4) eliminate stress, (5) prevent birth asphyxias and apoplexus where possible, and (6), prevent by law, an inheritance to children of a syphilitic, alcoholic, idiotic, hysterical or epileptic predisposition.

**A Means of Administering Quinine to Children.**—The well-known difficulties of giving quinine to children in pill or powder form have usually made it necessary to mix it with coffee, milk or syrup. The little patients, however, usually vomit the remedy given in this manner. On the other side of the question, it is not easy to replace the sulphate of quinine by the less soluble salts, which, although they may be tasteless, are difficult to take, because they fill up the mouth. Borde (La Sem. Méd., March 4, 1903) prescribes the sulphate of quinine to children of any age, as follows: He mixes in a mortar 1 gram of sulphate of quinine with 8 grams of olive oil. Twenty drops of this mixture contains 0.05 grams of quinine. In turning these drops into a teaspoon, filled with cold, fresh milk, preferably much sweetened, they will form in the midst of the milk, and on its surface, a little island. Each little particle of quinine having been enveloped by the oil, slips easily over the mucous membrane of the mouth of the child, who does not seem to suffer the least possible repugnance.

## OBSTETRICS AND GYNECOLOGY.

**A New Method of Suturing the Fascia and Levator Ani in Perineorrhaphy.**—The fact that so many operations have been devised for laceration of the perineum proves that repair of such injuries have not been uniformly satisfactory. In the opinion of G. H. Noble (Am. Gyn., March, 1903), the reasons for these failures lies in the fact that a true appreciation of the value of the fasciæ and the levator ani has been overlooked by operators in performing a perineorrhaphy. Having experienced the same difficulties as the other operators, the author has devised the following operation, the technic of which is as follows: (1) The perineal denudation should extend from the skin to the upper border of the levator ani muscle and from the rectal angle to the point marking the posterior commissure. The latter can be recognized by the existing scars. This makes a quadrilateral surface on each side of the vagina, the anterior is shorter than the rectal border, as the cutaneous and vaginal lines converge slightly at their anterior extremities. (2) The next step is the exposure of the levator ani muscle. This is done by inserting the thumb and finger in the vagina and grasping the muscle as it courses along the vaginal border of the denuded surface. It is then drawn out and dissected from the surrounding tissues. (3) The vaginal margin is closed by inserting medium-size catgut sutures about three-eighths of an inch from the edge of the wound, penetrating first the vaginal mucous membrane, and next the rectovesical fascia, issuing from the space formed by separating the latter and the levator ani muscle. They cross to the opposite side, pass between the levator ani muscle and the rectovesical fascia, puncturing the latter about three-eighths of an inch from the edge, and emerge upon the vaginal surface. The sutures are tied if they are interrupted, as they are inserted and repeated until the fascia is closed as far as the crown of the perineum. When using the continuous sutures, the author frequently ties them at the posterior commissure and leaves the ends long, turning them aside temporarily to be used later in closing the margin of the skin. (4) The edges of the levator ani muscles are approximated in the median line by three kangaroo sutures, one just in front of the rectum, the second just below the posterior commissure, while the third is placed midway between these two. When tied the muscles are brought into contact in the median line. (5) Four kangaroo sutures are passed around the bulbocavernosus and the conjoined tendon formed by the triangular ligament and the deep fascia. When the sutures are tied, the part embraced in their grasp comes in close contact and the edges of the deep fascia and the triangular ligament are brought into accurate apposition. The skin and superficial fascia are closed by the sutures left hanging at the crown of the perineum. The advantages of the operation are: (1) Greater strength contributed by the union of the fascia. (2) Better approximation of the muscles on either side by forming a band across the rectovesical cleft, converting it into two openings, rectal and vaginal. (3) The muscles do not separate and leave a thin perineum as in the case of lateral union of the muscular edges. (4) It contracts the vagina, draws the perineum forward and effects a better closure of the introitus. (5) It gives better support to the base of the bladder. (6) It draws the posterior wall of the vagina forward in front of the cervix uteri, thus having a tendency to prevent forward slipping of that part of the uterus, and diminishes slightly one of the contributing factors of retroversion.

**Pus in the Female Pelvis.**—The occurrence of a purulent collection in the female pelvis is due in most cases to inflammatory disease of the ovary or tube, under the caption of pyosalpinx or tubo-ovarian abscess has been extensively discussed by gynecologists. Pelvic cellulitis is now recognized as a rare condition, and while the cellular tissue at the base of the broad ligament or anterior to the uterus may become infected and form an abscess, yet the condition pure and simple is seldom observed. Tubal and ovarian abscess, suppurating fibroid and abscess of the uterine wall, hematocele (such as ruptured extra-uterine pregnancy which has become infected), suppurating dermoid and ovarian cysts, and, lastly, appendiceal disease, may be causes inducing an abscess in the pelvis. John B. Deaver, in further discussing this question says (Am. Gyn., March, 1903), that a peritonitis of an overlying fibroid of small size and of a sufficiently long pedicle to allow its migration into the right iliac fossa, or in close proximity thereto, also an infected fibroid of this character due a contortion of its pedicle, may simulate appendicitis. A small ovarian cyst of the right side twisted on its pedicle, may simulate appendicitis in the pelvis with abscess. Extra-uterine pregnancy gives an irregular history (menstrual), metrorrhagia, and sometimes the other subjective signs of pregnancy with the absence of the earlier history of appendicitis. It is very important here to elicit a careful history of the case. The presence of an infected appendix in the pelvis of a female may produce complicating conditions of the uterine adnexæ, or may be the infecting agents for later pathological lesions of these organs. The percentage of cases in which acute appendicitis exists in the female, has been variously estimated by different observers, and with wide variation. Of the last five hundred cases which the author operated upon, 170 were women, 34 per cent. Chronic inflammation of the appendix occupying the pelvis occasions symptoms which may be confounded with disease of the uterine adnexæ or retrodisplaced uterine fundus. The majority of instances of pelvic abscesses with the appendix above the ileopectineal line are due to secondary involvement from a primary focus, where bacterial infection is very virulent and the adhesions below are sufficient to "wall off" the abscess above the diseased appendix. The leucocytes increase in number with a predominance of the polynuclear forms. With the appendix below the ileopectineal line, somewhat the same course is observed. The onset is sudden, nausea and vomiting are more constant, and the bladder and rectal irritability are more marked. The symptoms of a pyosalpinx due to appendicitis, are those of appendicitis in the pelvis followed by dysmenorrhea and irregular menstruation, sometimes leucorrhea and other symptoms of unilateral pyosalpinx without the indurated feeling of the vagina. There is no history indicating previous gonorrheal infection. Perhaps it is just as well to assume that in all cases of pus in the pelvis, due to appendiceal disease, the adnexæ must become involved sooner or later. A collection of pus in the pelvic cavity demands early removal, and the method of operating will depend upon its location, extent and the degree of sepsis from which the patient is suffering. Using the finger to evacuate the pus after incising the posterior wall is very liable to spread the infection from the pelvis upward. Pus in appendicitis is of a vicious nature and exceedingly virulent, while it is well known that the accidental rupture of a pyosalpinx while delivering a tube, may spread the pus over the bowel without causing peritonitis. In the after-treatment of this operation, care must be taken that the cavity is always open and draining. This is difficult to do, as the repacking with gauze is attended with intense pain and there is some danger of breaking through the wall of adhesions and infecting the general peritoneal cavity. An abdominal section is to be preferred unless contraindicated by the condition of the patient. The mortality of appendicitis with abscess of the pelvis is considerably less than in those cases in which the appendix lies behind the cecum, pointing upward or to the median side of the cecum. The writer has seldom observed necrosis of the bowel in pelvic cases, and consequently sepsis from absorption through the bowel wall and fistula are of less frequent occurrence.

**The Treatment of Uterine Fibromata.**—After going into the etiology of uterine fibromata and their symptomatology, Mangin (Gaz. de Gyn., March 1 and 15, 1903) summarizes his methods of treatment as follows: Small fibrous tumors do not give serious trouble, hence should be treated medically, but must be carefully watched. Large tumors in young women should most surely be removed. After the arrival of menopause, one should operate before trying medical treatment. If the nature of the tumor permits, one should employ conservative operations, morcellement, ligature of the uterine arteries or castration. Radical operation should be employed if there should be degeneration of the organ, renal or cardiac accidents, hematoma, suppuration of the adnexæ or other grave complications.

**Uterovaginal Tamponade; Its Obstetrical Uses.**—The use of tampons inserted into the vagina for the control of hemorrhage is very old. They were mainly used to carry astringents, vinegar, etc., to the parts, says J. B. De Lee (Am. Jour. of Obstet., April, 1903). Leroux, in 1776 introduced the vaginal tampon, to carry astringents to the uterus. Wendelsteedt recommended the uterine tampon in 1806, by means of iodoformized gauze for post-partum hemorrhage. The reasons for the gauze to stop hemorrhage are: the rough packing stimulates the uterus by contact. The gauze tampons are directly over the site of the hemorrhage, and the pressure mechanically stops the flow of blood. The gauze acts like a Mikulicz, and favors the clotting of the blood in its meshes, and the subjacent mucous membrane. The gauze fills up the empty uterus. It is a clinical fact that the uterus will not close down on itself sufficiently to obliterate its cavity and to stop the hemorrhage. A blood-clot does not stop hemorrhage so well as gauze. The gauze lifts up the uterus and supports it, relieving it of its congestion, which it undergoes when it sags in the pelvis. The reestablishment does not stop the hemorrhage. The method is objectionable as it is unphysiological and increases the risk of sepsis. Air embolism is another possible result from the employment of uterine packing. Others hold that it is inefficient, and it has been claimed that operators use it when it is unnecessary, and, therefore obtain good results. The writer finds but little use for this measure in placenta previa. The tampon to induce labor is but one of the milder measures toward this end. The vaginal tampon is standard and useful in certain conditions occurring in abortion. The uterovaginal tamponade as a means of carrying medication to the parturient tract is employed by some accoucheurs. The writer believes this field of usefulness to be very restricted; indeed, that the procedure is capable of much harm. Constant manipulation of an infected uterus, as by douches, curettage, medicinal applications, packing, etc., only aggravates the infection and carries the poison farther, while at the same time the acual local benefit derived is lost to the spread of the disease to inaccessible regions.

**Pregnancy Following Nephrectomy.**—Although nephrectomy is such a frequent operation, only three cases have been reported in which pregnancy followed the operation. Two further cases are now reported by J. F. Baldwin (Cleveland Med. Jour., May, 1903). In one case the kidney was removed for hydronephrosis and in the other for a pyelitis. Normal pregnancy followed in both cases and the convalescence was uneventful. While numerically insufficient to form a basis for generalization, these five cases would seem to indicate that the prognosis of pregnancy following nephrectomy is by no means unfavorable.

**Bathing During the Menstrual Period.**—Considerable attention has lately been paid to this subject, the trend of modern opinion seeming to depart from the old, accepted idea that bathing during the menstrual period is harmful. A careful study of the effects of baths has been made by R. Fischel (Prager Med. Woch., May 7, 1903), who employed them in a series of 24 cases with comparatively normal menstrual histories. It was found that the lukewarm fresh water bath could be taken with impunity in normal cases. Salt water baths are to be avoided in the beginning of menstruation but need not be stopped if taken in the course of a "cure." In certain cases, the deposit of the minute crystals of salt and other mineral substance remaining on the skin, may set up a reflex irritation which may have an effect secondarily inhibiting or influencing the menstrual function.

**Constipation as a Factor in Eclampsia.**—No one will doubt the close relation between renal and intestinal diseases (John Ashell, Am. Jour. Obstet., April, 1903), not those intestinal diseases where there is structural change, organic diseases, but where there are chemical changes occasioned by malassimilation or a disturbance of digestion by miscellaneous indigestible articles of foodstuffs; again, in adults whose sole complaint is constipation, the gradual appearance of albumin is noticed if the intestinal chemical changes are not rectified. How this condition is brought about is not yet explained. Whether it is due to disturbed metabolism, toxemia, or destructive cell-masses that are carried from the intestine by the blood and deposited in the liver, producing areas of necrosis and further finding their way to the kidneys, producing a destruction of the parenchyma, is more than we can at present explain. Certain it is that pregnant women are capricious in their appetites and indulge in foodstuffs that they would never crave were they not pregnant. The majority of the author's cases occurred in winter when the skin was inactive and the waste products of metabolism were not excreted because of the dermal inactivity. During January and the early part of February a year ago in the New York Foundling Hospital, the examination of the urine of the women in the waiting wards showed in about five-sixths of the number the presence of albumin, ranging between a very faint trace and abundant quantity, with a lowered specific gravity; in some cases running as low as 1.004 and 1.010 and occasionally 1.001. There were from 30 to 40 women in waiting and practically all were primigravidæ. In addition to the presence of albumin, one-fourth showed signs of toxic symptoms; headache, nausea and vomiting, edema of the legs and increased arterial tension. There was no striking reason why five-sixths of the waiting women should have albumin and so many others show toxic symptoms. The ordinary routine for each patient—diet, baths, exercise, recreation, clothing, etc.—apparently existed as in previous months. The presence of constipation was, however, well marked, but whether the women were more unfortunate in this regard than the preceding inmates, could not be said. Several of these patients were taken with eclampsia and were treated by catharsis alone and the greater proportion recovered without any alarming symptoms. In fact, only one death was recorded, and this was due to a sudden heart collapse. Another interesting feature in the production of eclampsia is shown in the history of two of the author's cases of the year preceding, when the eclamptic attacks were preceded by the ingestion of large quantities of "good things" which were received in Christmas boxes. The day following the eclamptic seizures came on.

**Partial Symphyseotomy.**—A procedure of considerable interest, which shows what a country practitioner may resort to in an emergency, is reported by Diehl (Münch. med. Woch., April 7, 1903). He was called to see a patient who had been in labor for some hours. The pelvis was very narrow and the fetal head was firmly impacted, so that version was impossible and the application of the forceps was without effect. Cephalotripsy was then done but it was found impossible to extract the head even with the cranioclast, because, as was found later, the bones of the skull were very hard and the sutures united. The cutting through of the upper half of the symphysis was then resorted to. The author states that the delivery was completed without any further trouble. The usual after-effects are thus avoided and the patient in this case was out of bed in three weeks.

**Management of Occipitoposterior Positions of the Presenting Head.**—Posterior positions of the occiput almost always right themselves, even when left to nature and the management should consist in properly understanding and facilitating nature's methods. W. J. Cavanagh (N. Y. Med. Jour., April 11, 1903) points out that this rectification on the part of nature depends, however, upon a proper flexion of the head so that when the occiput strikes the pelvic floor it will be the most advanced presenting part and will be rotated by the forces around to the front. If the case is seen early before the membranes have ruptured it is frequently possible to avoid any dangers by a preliminary rotation of the head, which may be effected by having the woman assume the true genupectoral position and retain it as long as her strength permits or until vaginal examinations without change of position show that rotation has taken place. Should the occiput, after becoming anterior, show a tendency to return to its posterior position, rupture the membranes to hasten engagement of the head. If this is unsuccessful no hesitation should be felt in allowing nature to take her course in these early cases. The degree of flexion should then be watched and if not satisfactory, firm resistance, not pressure, should be made upon the sinciput to prevent any further advance and the actual flexion of the head should be left to the pressure exercised on the occipital end by the uterine forces. If the case is not seen till labor has so far advanced that simple pressure is of no avail one of two methods may be employed: (1) Anesthetize fully, pass hand into vagina, push the head gently up out of the pelvis, above the superior strait, then flex it and rotate the occiput forward, holding it in position till the pains aided by pressure from without cause an engagement of the head. (2) Delivery by the forceps reversed. This is not a difficult procedure. The blades should be introduced so that the cephalic curve passes over the ears, with convexity forward and the tips rest upon the occiput. When traction is made, which should be gentle and with one hand, the occiput is naturally drawn down, the head tilting on its attachment to the spinal column, yields to the leverage thus applied, and, the frontal end being forced up, flexion is at once established and the occiput becomes the lowest part. Forceps should then be removed and, if necessary, to complete delivery they should be applied in the normal method. Rotation will almost always occur if good flexion is obtained even though the head is very low. Sometimes when flexion seems impossible a more safe and speedy result may be obtained by causing complete extension of the head thus converting a brow presentation into the most favorable variety of face presentation, viz., that in which the chin presents under the pubic arch.

**Comparative Investigations of the Blood and Amniotic Fluid of the Mother and Fetus.**—The physiological processes which take place between mother and child during pregnancy are still in a large part unexplained. Some of these problems are considered in a series of investigations lately made by W. Zangemeister and T. Meissl (Münch. med. Woch., April 21, 1903) and include the determination of the red blood cells in both mother and child, the lowering of the freezing point of both sera and the amniotic fluid, and finally the specific gravity, the chlorine content, and the total quantity of albumin. The following facts were determined: The number of red cells is relatively greater in the child than in the mother; the blood of the child does not coagulate so readily as that of the mother, nor as completely, so that it was often difficult after twenty-four hours to obtain enough serum for the tests; the serum of the mother contained as a general thing, a larger amount of albumin than that of the child, but the specific gravity and the total oxygen content of the serum of the mother was always greater than that of the child; the quantity of chlorides is about the same in both individuals; the average freezing point of both sera is approximately the same, which means that the blood of infant and mother are under the same conditions of osmotic pressure. As regards the liquor amnii, it was found that the specific gravity and amount of albumin varied under normal conditions, within very small limits. The quantities seemed to be less in the amniotic fluid than in the blood. The lowering of the freezing point is always less in the liquor amnii than in the blood and this is probably one of the most marked differences between the two.

**Statistical Review of Cases of Albuminuria and Eclampsia.**—A résumé of the cases of albuminuria and eclampsia occurring during a period of thirteen years in the Maternity Hospital of the University of Pennsylvania, is published by J. C. Hirst (Am. Med., May 2, 1903). During this time there were 122 cases.

of the former, and 48 of the latter. He believes that albuminuria is the most reliable indication of kidney insufficiency, and the quantitative examination of urea, while interesting, is not valuable in this capacity. He considers fallacious the statement that if the amount of urea falls below one per cent., the woman is in danger. Cases are quoted where the percentage of urea varied from .3 per cent. to 2.8 per cent., and the total quantity excreted from 2.5 to 36 grams a day, yet the patients were in perfect health without any signs of toxemia. For the mild cases a simple eliminative treatment was given. The more obstinate cases are purged with magnesium sulphate and hot air baths or packs given every four hours for thirty minutes at a time. This treatment usually brings on labor in most cases. If not, or if the symptoms do not show decided improvement within 48 hours, induction of labor is indicated and performed by de Ribes bags or Krause's flexible bougies. Under this treatment only eight cases, or 6.5 per cent., developed eclampsia. Of a total of 48 cases of eclampsia, 15 died, or 31.2 per cent.—ten of which were practically moribund when brought into the hospital. Of the full term children, the mortality was 39.5 per cent. In about one-half the cases the convulsions were present before labor and ceased directly after delivery. His treatment of the convulsions includes the use of chloroform, purgation by Epsom salts if the patient can swallow, if not, two drops of croton oil placed on the tongue. If the pulse is full and bounding, veratrum viride, m. 15, is given per hypo, and repeated in 5 m. doses every two hours until the pulse softens. Hypodermoclysis under the breasts every four hours alternated with the hot packs. The uterus should be promptly evacuated and for this purpose the author has lately employed the Bossi dilator with good results and much less shock to the patient. If the os is wide open forceps may be applied. After delivery the treatment is kept up until the patient is passing large quantities of urine, and is then gradually relaxed. Eleven of the cases developed convulsions after labor, and of these seven died, a high record of fatalities.

**Extra-uterine Pregnancy.**—Four interesting cases of extra-uterine pregnancy have been reported by Lingen (Prak. Vrach., No. 9, 1903). In the first one there was cessation of menstruation for 5½ weeks; hemorrhage; in eighteen days—pain and symptoms of acute anemia. Uterus soft; to the right and back there is felt soft resistance. Collapse in three days. Cesarean section; hematocele, tubular pregnancy. Recovery. (2) Menstruation absent for seven weeks; pain. Uterus enlarged; on the right to the back there could be felt a soft swelling the size of a fetal head; decidual membrane thrown off by the uterus. Cesarean section; the right tube dilated and presenting a hematocele; the left a hematosalpinx. Both tubes removed. Recovery. (3) Periods two weeks late. To the right of the womb a large soft swelling, which did not diminish in size during some time. Cesarean section. In taking up the tube (thinned out and considerably dilated) it ruptured and there appeared a coagulum. Both tubes, as well as a subserous myoma were removed. Result of operation not stated. (4) Patient had already been operated on for an extra-uterine pregnancy. Now had no menstruation during four months. To the right of the uterus a swelling the size of a child's head. On Cesarean section this swelling ruptured and the amniotic fluid gushed out. The right tube was found to be the seat of the fetus. Recovery.

**Hysterectomy in Puerperal Infections.**—The indications for hysterectomy in puerperal infections are reviewed by H. Duret (Jour. des Sci. Méd. de Lille, April 4 and 11, 1903) who divides puerperal septicemias into those in which local uterine, peri-uterine or adnexial lesions exist and those in which no local lesion is apparent. The former he believes are to be treated by uterine disinfection, curettage, ablation of adnexa or hysterectomy. The latter class he subdivides into acute and chronic. Among the first, cases are seen in which septicemia is due to placental infection, which he holds may not be overcome by curettage; the sole effectual measure being abdominal or vaginal hysterectomy. In other acute cases the gravity of the condition seems to depend upon the excessive virulence of the microbic agent; in which case it is doubtful if ablation of the uterus would prove advantageous; especially if injections of artificial serum fail of effect. The chronic septicemias he considers the result of uterine or peri-uterine phlebitis or lymphangitis or of some unrecognized foci. In these cases there may be multiple foci within the uterine parenchyma or in the efferent or afferent vessels. To this group is given the name of puerperal uterine pyemia. In this class of cases septicemic symptoms generally appear shortly after parturition and are of prolonged duration. Hysterectomy may be of service under such circumstances provided it is not too long deferred. In all cases of septicemia, the author holds that the most helpful measure is found in massive subcutaneous or intravenous injections of artificial serum, either as a curative measure or as a coadjuvent to more radical treatment.

## MEDICINE.

**Gastric Sensations.**—The various sensations experienced by certain persons and attributed by them to the presence of live animals in the stomach, have usually been ridiculed and looked upon as delusions. Alfred Stengel (Univ. Penn. Med. Bull., May, 1903) finds, however, from his own experience that there is often an anatomical basis for the patient's supposition that he is harboring some living thing in his stomach. In one case the patient complained of the sensation of a snake in his stomach. Examination gave evidences of a gastritis of a pronounced grade, with dilatation. An autopsy some time later showed the mucosa of the stomach thickened and had given origin to several long polypoid growths. In another case the patient improved under appropriate treatment. The author is convinced that many of such cases are in reality gastric disease and should not be looked upon as delusions but given the benefit of proper treatment.

**Causative Factors of Obstipation.**—By obstipation is meant difficult defecation due to mechanical obstruction, which resides in the rectal wall or some organ which impinges upon the rectal wall. A great deal of attention of late has been paid to organic causes of constipation, with the happy result that many of the most chronic cases have been completely cured. L. J. Hirschman (Med. Rec., May 16, 1903) believes that enlarged rectal valves are a very important factor in causing obstipation and more frequent careful examinations of the rectum would disclose the presence of these mechanical obstacles. The enlarged prostate and misplaced pelvic organs are also efficient causes of obstipation at times but not so frequently as the rectal valves. The symptoms complained of are, of course, the inability to defecate properly or comfortably. There is the desire to go to stool but even after straining hard only a few hardened masses pass or a long ribbon-shaped stool with or without mucus. The ribbon-shaped stool is almost pathognomonic. There is usually an accompanying sense of fulness in the rectum and abdominal distention is common. Various symptoms due to auto-intoxication may follow. Proper diet, exercise, massage, water and out-of-door life are beneficial to such cases but they cannot be curative and unless the obstruction is removed, more or less trouble must persist. A careful examination with a speculum will disclose hard, fibrous enlarged rectal valves whose section is necessary to relief. This operation may be easily done with or without general anesthesia, for the upper rectum is not well supplied with sensory nerves. With angular rectal scissors a V-shaped incision should be made down to the base of the offending valve and the intervening part removed. The cut edges are then crushed between the jaws of a valvotribe to prevent hemorrhage. The higher valves are then treated in the same manner. The rectum is then packed with sterile gauze through which a rubber tube for the passage of gas is inserted. This is removed at the end of one day and within a week the patient may usually resume his work.

**Mixed Infections in Pulmonary Phthisis.**—There are still very few practitioners who give sufficient consideration to the problem of a mixed infection in this disease, and differentiate among their patients, with a view to ascertaining the true condition and selecting the proper remedies and nutrition. From this standpoint, Paul Paquin (Jour. Am. Med. Ass'n, May 16, 1903) has made a large number of observations with especial reference to the form of treatment demanded by the complicating bacterial invasion. He discusses very fully the microscopical appearances of a number of sputa, and finds the pneumococcus present in a fair proportion. He divides treatment into two parts, first the aerial, which includes climatology, pure or medicated air, and the artificial efforts to drive remedies directly down into the lungs; second, the circulatory, which means all the efforts to reach the lungs and influence the system generally by means of the blood and lymph circulation. This includes internal medicine, hypodermic injections and dietetics. In discussing nebulization he points out that it is only of value in selected cases, and has no effect when applied to consolidated tissues. Nebulæ are only of service when the lymphatics can be reached. It is not good practice to apply 40 to 80 pounds pressure to tuberculous throats, thus causing a hyperemia and possibly a rupture of the air-cells. The circulatory system insures the pulmonary distribution of certain drugs but the essential thing in all treatment is the proper food supply and the author dwells particularly on the value of the juice expressed from raw beef, at least 4 to 6 pounds being employed daily. The cacodylates and iodine are also worthy of trial.

**Permanent Cure of Tic Douloureux.**—Trousseau has said that he has never known a single case to be radically cured and it is the general opinion that a genuine case is one of the most obstinate conditions with which we come in contact. J. K. Bauduy (St. Louis Med. Rev., May 2, 1903) has had excellent success with a line of treatment which he has pursued for some time and reports a case in which there is apparently a phenomenal cure. There are four factors in his method of procedure and each one is essential to success: (1) he uses potassium iodide in moderate doses over a considerable period and holds that this is peculiarly antagonistic to chronic neuralgias; (2) the administration of arsenic, which in all troubles of the nervous system with degenerative tendencies is an indispensable feature of successful therapeutics, especially when combined with iron; (3) the administration of large doses of strychnine. He gradually increases the dose, giving it by mouth, till the patient takes one-tenth of a grain three times daily for some time. (4) He makes a daily application to the painful parts of an hour's duration of a descending, anodic galvanic current, both inside the mouth and over the affected cheek. The use of the glycerophosphates may be helpful to the above method of treatment. He has abandoned the use of aconitia as being too dangerous.

**Treatment of Gastric and Duodenal Hemorrhages.**—Hemorrhages from the stomach and duodenum are due to disintegration of blood vessels in consequence of ulceration, seldom of erosions. The so-called capillary hemorrhages are the result of extreme congestion of the mucosa and occur, but very rarely, in vicarious menstruation, cirrhosis of the liver and sometimes from no apparent cause. M. Einhorn (N. Y. Med. Jour., May 2, 1903) mentions the following points in differentiating between gastric and duodenal hemorrhages. In the latter condition the pains come on about two or three hours after eating, there is considerable melena associating with hematemesis or existing alone, and the pains are often found in the right hypochondria region. The diagnosis between the two conditions can seldom be made positively. The treatment of such hemorrhages consists first in arresting the bleeding and then rectifying, so far as possible, the underlying cause. Absolute rest in bed, total abstinence from food and drink, and the administration of opiates, subcutaneously or per rectum, will serve to lessen peristalsis of the stomach and intestines and favor healing. Rectal alimentation and moderate amounts of saline solution per rectum or subcutaneously will supplement the amount of fluid required. Among the most useful remedies which may be used to check the hemorrhage, the local application of an ice-bag is the most rational agent that has been employed. Ergot may act by contracting the blood vessels. Among the later remedies suggested, two are of considerable importance and seem to have a direct and rational basis of action. Gelatin facilitates coagulation and can be employed by mouth or subcutaneously. In the latter instance a two-per-cent. solution may be used and 100 c.cm. injected at a time. When given by mouth the simple calf's foot jelly may be employed, but this method is more liable to produce peristalsis. The other remedy is adrenalin, and the author has made numerous experiments upon rabbits to demonstrate the value of the drug in arresting hemorrhages from the mucous membrane of the stomach. He has also employed it both subcutaneously and by mouth in several cases of gastric hemorrhage with apparently good results. Two surgical procedures are now made use of at times to arrest hemorrhage: (1) Finding the bleeding area and excising or cauterizing it; (2) performing a gastro-enterostomy. The indications for surgical interference are the following: (*a*) Very profuse hemorrhages occurring at frequent intervals demand immediate operation; (*b*) profuse gastric and especially duodenal hemorrhage occurring with more or less regularity requires an interval or prophylactic operation to avoid a return of the bleeding; (*c*) frequent small hemorrhages, which greatly debilitate the patient and cannot be stopped by rational therapeutics.

**Post-Vaccinal Anemia of Infants.**—A certain number of infants vaccinated by M. Bellotti (Gazz. Osped., May 10, 1903) developed a pallor of the skin and mucous membranes which persisted for months, though prior to vaccination the patients were of a healthy color and were free from disease. Though the author was not in a position to make a blood examination, he believes the changed appearance to be due to anemia induced by the introduction into the system of what he regards as an attenuated smallpox virus. Many observers having reported a diminution in the number of red blood corpuscles, together with a mononuclear hyperleucocytosis in variola, the author believes it not improbable that a like condition might occur after introduction of vaccinal lymph.

**Acute Yellow Atrophy of Liver.**—In a treatise on the subject of acute yellow atrophy of the liver, W. Ferris and W. H. Clayton-Greene (Lancet, May 2, 1903) draw the following conclusion: The theory already advanced by others that the condition is one of toxemia with resulting changes in the viscera is the one which most satisfactorily explains the clinical and pathological features, and the source of the toxemia is in all probability the intestinal tract. It is true that so far no lesions have been described there, but that detracts little from the value of the explanation, since it is quite possible for an infection of great magnitude to be started from a lesion so small as to be overlooked, as is the case in so-called "idiopathic tetanus." With regard to the pigment found post mortem, he thinks it is strongly suggestive of hemolytic action of the poison causing the disease. He does not think that a liver showing the amount of destruction that was shown in his case could have been capable of elaborating any pigment; nor was there sufficient iron present in the liver to warrant the assumption that the blood cells were destroyed there. The suggestion that the pigment had been stored up in the liver, and was set free with its destruction, is, he thinks, inadequate. Again, there is a close relation between the amount of pigment and the fatty change. Wherever the pigment was most thickly deposited, there the fatty change was most advanced. This, he thinks, allows of the suggestion being made that the pigment is a poisonous product of hemolysis, a combination of toxin and blood pigment capable of producing cell pigmentation and destruction in various parts of the body. A similar phenomenon has been observed by some American workers in relation with cirrhosis of the liver, pancreas, etc., and the term "hemochromatosis" has been applied to it. In those cases, as in this, the suggestion has been put forth that the pigment is poisonous. He would urge that the case, from a pathological and clinical standpoint, would support the view that the disease is not primarily hepatic in origin, the liver only suffering with other parts; that there is a hemic infection with micro-organisms or their toxins with subsequent hemolysis; that there is a combination of toxin and blood-pigment to form a poisonous compound which is injurious to the tissues and causes their discoloration; that the liver must be absolved from the charge of forming the pigment, but that it is formed in the blood vessels themselves; and that the source of the mischief must be looked for in some part of the alimentary canal.

## GENITO-URINARY AND SKIN DISEASES.

**The X-ray and Finsen Light in the Treatment of Lupus.**—Both these agencies have already proven the wonderful beneficial results which may be derived from their application to superficial malignant growths and ulcerative processes, but it has not yet been thoroughly worked out which is the better and more effective method. A. D. Rockwell (Med. Rec., April 11, 1903) raises the latter point and says that the actinic rays possess one great manifest advantage over the X-rays, namely, their more benign action. It is true that the light radiance may cause dermatitis and pigmentation, but this usually rapidly disappears. On the other hand the curative effects of the X-ray in lupus and other skin affections follow more rapidly than those of light, while with improved methods X-ray burns may become in time an almost negligible quantity. The two remedies differ not so much in kind as in degree—in the frequency and intensity of their vibrations. In a case of lupus of the chest the Finsen light was employed and improvements were noticed up to the fifteenth treatment but, thereafter, no further improvement was appreciable. Two weeks later treatment was begun with the X-rays, resulting in complete recovery. He draws no conclusions from this case but suggests that each remedy may be found to have its special advantages depending, no doubt, largely upon individual peculiarities and susceptibility.

**Treatment of Ringworm.**—The difficulty of curing ringworm of the scalp or beard is thoroughly appreciated by all physicians for it is frequently a matter of several months even when the most persistent and painstaking care is taken. When it occurs upon a non-hairy portion of the skin almost any of the parasiticides will effect a rapid cure. G. T. Jackson (Med. Rec., April 11, 1903) recommends the use of goose grease as a vehicle to which is added a dram or more of iodine crystals to the ounce of grease. This preparation is applied twice daily till it produces a reaction which will be evidenced by a little swelling of the patch. Then once a day will be sufficient. In two or three weeks the hair falls out of the patch and it becomes bald like a patch of alopecia areata. After a time the hair grows again and the case is cured. The first applications are liable to be a little painful for a few moments, but after that even children do not complain of discomfort. No epilation is necessary. If this remedy proves inefficient an ointment composed of from half a dram to a dram of croton oil to the ounce of sulphur ointment will be found curative by causing a dermatitis and converting the patch into a perfectly bald one.

**Posterior Urethritis and Prostatitis.**—The view is gradually gaining ground, especially among those urologists who emancipated themselves from the routine methods of treating chronic posterior urethritis, that there are cases so obstinate to every known therapeutic means as to properly be called incurable. Zartzyn (Pract. Vrach, Nos. 14 and 15, 1903) regards the treatment under three heads: (1) Mechanical, (2) thermic, and (3) drugs. Of the mechanical means the most important is massage of the prostate per rectum, subjecting to this only the affected portion of the gland. As a criterion of the effectiveness of this procedure he regards the rapidity with which the thickened part empties its contents: The massage should never last over three minutes. Mechanically, the introduction per urethram of gradually larger sizes of sounds, or, if such be used, of psychrophores. However, the author does not seem to have obtained any specially favorable results from either, and even thinks that frequent dilatation of the urethral sphincter tends to weaken it. As regards drugs, the best results are to be expected from silver nitrate and sulphate of copper (the latter introduced by finger); either of the two is introduced into the urethra in the form of Tommasoli's salve of the following formula:

| | |
|---|---|
| Silv. nitr. | 0.4 |
| Lanolin (sterilized) | 16.0 |
| Sterilized olive oil (best) | 4.0 |

It is most important to see that the salve be thoroughly sterilized. If this salve cannot be expressed through Tommasoli's syringe its consistence is softened, thus:

| | |
|---|---|
| Lanolin anhydrici steriliz. | |
| Aq. distil. ster. aa | 10.0 |
| Arg. nitr. | 0.4 |

Ung.

The treatment is begun with this salve, which is later on replaced by one made of sulphate of copper, from one per cent. up to five to ten per cent. Suppositories are also introduced per rectum, of which Finger's is the most frequently employed:

| | |
|---|---|
| Iodi puri | 0.06 |
| Pot. iodi | 0.6 |
| Extr. bellad. | 0.15 |
| Olei cacao q. s. | |

Ut ft. supp. No. 10.

To avoid straining often consequent upon the introduction of such suppositories, two per cent. cocaine is added to them. Thermically Winternitz's psychrophores, warm or cool rectal injections, rectal psychro- and thermophores are all of undoubted utility, only in acute and recent cases. It may be stated in a general way that chronic gonorrhea prostatitis is quite a frequent disease without a definite symptomatology. In all cases of chronic urethritis the prostate should be examined. As the means at our disposal do not enable us to guarantee a positive cure, some more effective methods of treatment should be looked for; of these it is possible that injections of some remedial agencies into the parenchyma of the gland may in the future be adopted with success.

## EYE, EAR, NOSE, AND THROAT.

**Affections of the Eyes in Scarlet Fever.**—The eyes are usually rather rarely affected in scarlet fever. Strgeminsky (Nowiny Ckarskie, April, 1903) presents a rather interesting account of 7 cases in which the various structures of the eyes were attacked in the course of scarlatina, during an epidemic of the same. In a nine-year-old patient, who was seen at the period of desquamation, there was observed on the left cornea above the middle line an ulcer with rough smaller edges and pus at the bottom. The rest of the cornea was opaque, and the pupil contracted. Treatment: Application of 50 per cent. solution of lactic acid, atropine, some iodoform and a warm compress. Recovery within twelve days. In one case of scarlet fever complicated with diphtheria there occurred paralysis of accommodation and a condition of micropsia. Strengthening treatment, subcutaneous injections of strychnine and electricity with the interrupted current brought about complete recovery within three weeks. In another case there was diphtheritic conjunctivitis with purulent infiltration of the entire cornea; result: atrophy of the eye.

**Trachoma.**—Trachoma has finally drawn to itself the attention not only of the specialist but also of the sanitarian. It is, however, very important to distinguish trachoma from follicular conjunctivitis. Velianiovich (Prakt. Vrach, No. 13, 1903) points out the difference between the two affections as follows: (1) The transparent granules (swollen normal follicles) are to be seen in both affections; but what distinguishes trachoma from follicular conjunctivitis is the fact that alongside with these transparent granules there are also seen deeply situated dense granules, lymphoid new formations. (2) Trachoma affects primarily the folds of both the upper and the lower lids, whereas in follicular conjunctivitis the granular process is localized almost exclusively in the lower lid, preferably at the angles and the tarsus. (3) The trachoma granules tend to become cicatricial tissue, whereas this is never the case with follicular conjunctivitis, in which restitution ad integrum is the rule. (4) If untreated, trachoma may last for years, while conjunctivitis follicularis under some conditions will be cured of itself in from five weeks to several months. (5) We find in trachoma very pronounced pathological alterations of the entire conjunctiva (hypertrophy of the glands, lymphoid infiltration and new formations in the dense granules), while in follicular conjunctivitis all the changes are limited to swelling of the normal follicles and to the various phenomena accompanying an ordinary conjunctival catarrh. (6) Finally, perfectly competent and trustworthy authorities point to localities where follicular conjunctivitis is prevalent and trachoma entirely unknown, which fact is a direct indication of the etiological difference between the two affections.

## THERAPEUTICS.

**Alcohol in Therapeutics.**—Notwithstanding the great importance of the subject, we possess as yet no definite data regarding the action of alcohol as a therapeutic agent. Some authors as Petit, Pinel and others (Revista Critica, No. 7, 1903) have attributed a great deal of benefit to its use therapeutically while many others equally eminent deny its employment in disease. However, it is established beyond any doubt clinically that moderate doses of alcohol act as a cardiovascular, nervous stimulant and as a heat-generating agent. Brunton has long ago proved that alcohol is especially indicated in the postfebrile collapse of typhoid fever. The mechanism of the action of alcohol in pneumonia, and, in a general way, in the various infectious diseases of an adynamic character is quite simple; thus in pneumonia we have an exudate in the alveoli, the disappearance of which indicates convalescence from the disease; but in order that absorption of the exudate may take place there is called for an unavoidable expenditure of nervous force as well as of blood; and it thus becomes necessary to supply the organism with a food which, while easily absorbable, is at the same time potent to sustain the nervous force and to maintain animal heat. No other ailment is capable of meeting these requirements in a way as is the case with alcohol which, while exercising its special effect on the nervous system, at the same time combines with the oxygen of the tissues, thus furnishing heat for the maintenance of the animal temperature. In the febrile states alimentation is insufficient to supply the 2,500 calories necessary to the existence of an ordinary individual of medium weight, and the latter is therefore compelled to draw gradually on his exhausted organism. Alcohol furnishes for each gram 7 calories and its combustion is the more rapid and complete the higher the fever; it thus represents, in an eminent manner, a "saving" medicament.

**Compresses Saturated with Alcohol are Comparatively Unknown Here.**—Salzwedel has used them with success in many cases and Kolbassenko (Prak. Vrach, No. 9, 1903) has collected an enormous material extending over five years, from which he draws the conclusion as to the undoubted utility of such compresses as pain-stilling agents. The compress is made as follows: 6 to 8 layers of gauze are saturated with a 57 degree, 70 degree, 90 degree or 95 degree solution of alcohol; to the solution of the last strength some aromatic vinegar is usually added. The part is covered with the gauze over which oiled silk and the like is placed to prevent too rapid evaporation of the alcohol. To control the effect of alcohol a weaker solution is resorted to, and if the skin be very tender, or if there be a wounded surface, the part is first powdered over with xeroform, or smeared with a salve of xeroform (one part), vaseline and lanoline (aa 10 parts). The compresses are sometimes employed during a period of several days; in such cases they must be used at certain intervals, not uninterruptedly. The analgesic effect of the compress extends deeper than the superfices of the skin, thus it has been used often in perimetritis and deeply situated cervical glands, etc. Besides this effect the author has found the compress as a very important means in breaking up or in limiting a beginning suppuration. Used in carbuncles it caused the immediate disappearance of pain, while the purulent and gangrenous processes were held very much in abeyance. As the skin is usually very sensitive in such cases it must be protected from irritation caused by the alcohol by the above-named powder or salol.

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## THE CANCER AND VARIOLA PARASITES.

THE discovery of an intranuclear cycle of the variola parasite, by Professor Councilman of Harvard University, and the impetus which his observations will now undoubtedly give to the search for protozoa in other diseases, call to mind a suggestion which has been made in other quarters that the organisms of variola and cancer are closely related.

It will be remembered that Gaylord in his recent work on cancer, and Bosc, in an article in the *Archives de Médicine Expérimentale et d'Anatomie Pathologique*, advanced the idea that cancer and variola and sheep-pox (Bosc) were all sporozoan diseases and would have to be considered as a group. In this connection the recent publication of Borrel in the *Annales de l'Institut Pasteur*, Vol. XVII, No. 2, entitled "Epithélioses infectieuses et Epithéliomas" is of especial interest.

This author arrives at the conclusion that variola, sheep-pox and cancer are diseases with similar etiology. He believes that the etiological factor in these infections, however, is as yet undiscovered and scouts the possibility of protozoa having anything to do with them. He is particularly hard on the variola parasite, especially the vaccine body, which he says Sikorsky has recently produced artificially. So far as cancer is concerned, Borrel adds an observation of great interest. He states that a certain breeder of white mice in Paris, who furnishes large numbers of these animals for experimental purposes, possesses a cage, a large percentage of the mice from which develop a type of epithelioma which forms metastases. Inasmuch as mice are frequently introduced into this cage, heredity has nothing to do with the phenomenon. Carcinoma has never been known to develop in the mice reared in other cages, and Borrel concludes that this observation alone is enough to prove the infectious nature of carcinoma. The tumor in question can be transplanted and contains large numbers of the inclusions which are viewed as parasitic by various observers. On the basis of these observations Borrel arrives at the conclusion that although it is highly improbable that a protozoon has anything to do with these various diseases, cancer must be looked upon as infectious, and that we are justified in assuming the existence of a cancer virus in the sense that we apply this term to vaccine.

Although Councilman has not recently publicly expressed his opinion, it is generally understood that he believes that the organism of variola has absolutely no relation to the cancer problem, and it is interesting to note the opinion of a man of such influence as Borrel, who, not believing in the possibility of a protozoon parasite, so strongly endorses the analogy between these infections, previously drawn by Gaylord and Bosc.

## PETTY-MINDED MEDICAL MEN?

THE *Literary Digest* of May 23, in its review of a book, makes the following statement:

"For the rest, that portion of the story which shows the insanity of prejudice to which the mob resort in its revolt against the new cult, and the ignoble part played by petty-minded medical men whose real fear is the depletion of their own incomes—all this is very well done and very little exaggerated—as our daily papers amply prove."

It sometimes happens that those who wish to oppose the enacting of a sanitary law, will try to excite opposition by claiming that the doctors favor it for selfish reasons. The laws for compulsory vaccination, for the physical examination of school-children, for the regulation of the practice of medicine, and many others, have had the charge made against them that they were intended to protect and to increase the incomes of physicians. Such accusations, however, are so evidently false, that they have never been seriously considered.

Therefore it passes our comprehension how a periodical, of the class of the *Literary Digest,* has allowed itself to endorse such an erroneous idea. There are, indeed, few medical men who play an ignoble part in private or public life for the sake of their incomes.

Our daily papers, far from proving, do not even offer any evidence of "the ignoble part played, etc.," unless it be in the advertising columns.

If there were medical men who would oppose any method or means of curing the sick or preventing disease, they would certainly be heard from in the attempts being made to eradicate malaria from infected districts. During the summer months, from thirty to sixty per cent. of the practice of many physicians consists of malarial cases, and yet Mr. Henry Clay Weeks, the engineer in economics who is so active in the anti-mosquito crusade, is emphatic in his praises for the disinterestedness and willing assistance displayed by every doctor with whom he has come in contact.

Mr. Weeks also related the fact recently, that in one district the business men managed to suppress from publication the reports he had received from the physicians, the entomologists and the engineers—and that, too, after it had been set up in galley form—because they feared its effect upon the real estate market.

Some medical men are doubtless petty-minded, and there are many, too, who play ignoble parts, but it can not be truthfully asserted that the cause of any of their actions toward the protection and care of the public health, is excited by a real fear of the depletion of their incomes.

## EARLY DIAGNOSIS OF OSTEOMYELITIS.

IT has been well said, and often, that what the practitioner of medicine wants to guide him in the rational care of a patient suffering from this disease in its dread acute form is not methods of treatment but of recognition.

As was noted in recent issues of the MEDICAL NEWS the subject of osteomyelitis provoked a very active discussion in the Section of Surgery at the New Orleans meeting of the American Medical Association. Dr. De Forest Willard said that every case of acute osteomyelitis should be treated as energetically as any appendicular inflammation or indeed as any gathering of pus within the body. He said if we could only cut out of our nomenclature and minds that bugbear of modern medicine, that wretched apology that cloaks the ignorance of so many of us, which kills and maims many helpless children as well as men and women, that *"rheumatism,"* so easy to diagnose as such and to treat with a purge and a liniment; many lives would be saved. Dr. Stewart, of Minnesota, cordially agrees with Dr. Willard and would add to rheumatism, typhoid.

Dr. J. B. Murphy, of Chicago, believes that there are certain very positive indications that should enable every intelligent practitioner to differentiate acute osteomyelitis from acute rheumatism within the first forty-eight hours. Foremost among these are the presence in the former of agonizing pain following deep pressure over one spot for at least two minutes; the absence of effusion into the joint; the absence of local edema, and the presence of marked temperature. Since the infection takes place almost invariably on the shaft side close to the epiphyseal line, which, indeed, is the barrier guarding the joint, it is evident that as the process progresses it must migrate toward the center of the bone until sufficient pressure is encountered to cause the pus to burst through. This path is usually along the line of a Haversian canal to a distribution beneath the periostium. It was taught by Sayre that until this event happened the child would have night cries or "terrors," and probably there is no better symptom indicative of pressure within the bone. Sometimes percussion over the suspected area will elicit pain where other methods fail. This technic is always used by the dentists when they suspect an abscess in the alveolar tissue at the root of a tooth.

From typhoid the differentiation of acute osteomyelitis is not always easy and error can be forgiven more readily than in the case of acute rheumatism. This is accounted for by the fact that in these rare conditions the patient is so overwhelmed by the virulence of the toxins, which are well known to become much more poisonous when subjected to pressure, that no time is given to profit by the expression of that most valuable of indicators, pain. The patient gives no response to percussion or to pressure. For diagnosis in these most difficult cases reliance must be placed on inspection and upon the presence or absence of high temperature and leucocytosis. It will thus be seen that here as elsewhere pain is an invaluable aid in the differential diagnosis of these diseases.

## UNCINARIASIS.

It is most gratifying to note the interest with which the medical world at large is devoting itself to the study of animal parasitology. Of late many journal articles have appeared dealing with this subject, evidencing the fact that practitioners are realizing the importance of a more thorough knowledge in this long-neglected branch of medical diseases. Why this lethargy has existed is inexplicable, but the fact remains that we have only just awakened to the realization of the importance of this subject. The average practitioner frankly confesses that he knows almost nothing of the animal parasites that infest the human organism.

A paper read before the Johns Hopkins Medical Society, January 19, of this year, makes us marvel that we have so long permitted the widespread prevalence of uncinariasis in our Southern States to escape our notice. Through the permission of the Federal Government, a commission was sent out from the Bureau of Animal Industry to investigate the statement made by the chief of the Bureau in regard to the general infection of the inhabitants of this portion of the country by the *Uncinaria duodenale*. The seemingly sweeping statements were more than justified by the results obtained by the commission's work.

The investigators started their search for the parasites at the Richmond Penitentiary, where four days were spent in the examination of the intestinal discharges of the inmates, but not a single case of this variety of infection was found. However, at one of the copper mines of South Carolina the first case was met with and from this point southward, throughout the mining district, a large number of typical cases was discovered.

The interesting fact was brought to light that the inhabitants of the low-lying sandy regions were infected with the hookworm, while people living in clay lands were found to be free from the disease. Among the children employed at the cotton mills of Macon, Georgia, only those who came from the sandy districts were affected by the worm, and their condition was almost entirely cured after they had been at work in the mills for some time. According to the report of the Commission, the experts became so proficient that after a short time it was possible to pick out the infected individuals by the general appearance alone. In a large orphan asylum, which was visited, the children were lined up in two rows and by merely walking down through the lines it was possible to detect the "suspects," and by an examination of their stools to confirm the diagnosis.

It was found that miners, farmers, brickmakers and children were those most often affected. Twenty-four hours of freezing weather is stated to be sufficient to destroy the eggs and larvæ of the parasite. The disease was less prevalent in the winter than in the summer months. Children that had been infected with the worm were markedly checked in their growth, so that in many instances young women of twenty would have but the development of children of twelve or fourteen years. The sexual organs seemed to suffer the most in this retardation.

Contrary to what might be expected, uncinariasis was more prevalent in the rural districts than in the more densely populated regions. As a method of prophylaxis the Commission advised that the feces be covered with oil and then burned, as there are no means of filtering the water in those portions of the country where the parasite abounds.

At the recent meeting of the American Medical Association, held in New Orleans, the whole subject of uncinariasis was rehearsed and many most interesting points in the diagnosis, treatment and clinical manifestations of the disease were brought out by physicians residing in the Southern States.

Up to the present medical parasitology has been neglected in the medical schools, a possible lecture or two being considered all that was necessary to make the student thoroughly conversant with the matter. Sooner or later, there should be added to the curricula of all our medical schools a definite course in animal parasitology, and we may then look for a true appreciation of the importance of this branch of medical instruction.

## ECHOES AND NEWS.

### NEW YORK.

**Dogs Must Go Muzzled.**—Another week's respite to unmuzzled dogs was granted by the Aldermen Tuesday. It will be only for a week, however, because at next Tuesday's meeting of the board an ordinance will be passed which will provide for the impounding of all dogs running loose in the streets unmuzzled. President Haines, of the Bergh Society, has reconsidered his refusal and has consented to undertake the work of catching the unmuzzled dogs. An ordinance is to be drawn naming the Bergh Society, instead of the police, as the officials upon whom the city will depend for the carrying out of the regulation. This amended ordinance will come up next Tuesday and will pass with practically no opposition. It will be necessary for the Bergh Society to increase its staff of dog catchers. The Board of Estimate will be asked to make an appropriation sufficient to meet the pay of the extra men. As an offset to this the $3 fine which will be imposed on owners who allow their dogs to run the streets without a muzzle will be paid into the city's general fund.

**East Side Physicians Club.**—At a mass meeting of the physicians held under the auspices of the East Side Physicians Club, June 12, 1903, Dr. Julius Solow presiding, the following resolutions were unanimously adopted:

*Whereas,* a number of physicians practising on the East Side of the Borough of Manhattan have been arrested on warrants in criminal proceedings instituted by the Commissioner of the Health Department without previous notice, warning or opportunity to present their defense of alleged charges of larceny in accordance with the best traditions of the Health Department, and

*Whereas,* this hasty, unwarranted and unprecedented aggressive action of the Department may tend to alienate the rank and file of the profession from their natural union and cooperation with the said Department, and

*Whereas,* the medical profession of this city as a unit has always stood ready to serve the Department of Health without fee or favor, be it

*Resolved,* that the physicians of the East Side in mass meeting assembled, deplore the circumstances and emphatically protest against the unmerited and summary procedure of the Department of Health, a procedure which demoralizes the community, offends the profession and gravely injures the accused physicians and their families by branding them as common criminals, and be it further

*Resolved,* that a copy of these resolutions be forwarded to His Honor, the Mayor of this City, to the Commissioner of the Health Department, and to the press.—Dr. Julius Solow, President East Side Physicians Club; Dr. I. Wm. Schapiro, Secretary.

**The Death of Dr. Love.**—Just as we are going to press reports have been received announcing the death of Dr. I. N. Love, the well-known editor of the *Medical Mirror*. Dr. Love has been in Europe and was on his return journey and was expected to arrive Thursday morning on the Cunard Line. Wednesday he is thought to have had a severe heart attack from which he did not rally.

The death of Dr. Love removes from the ranks of American Medical Journalism one of its most conspicuous members. While Dr. Love's columns were distinctly breezy and at times somewhat extreme, there was a hearty, hale fellow well met attitude that endeared him to many. For many years Dr. Love resided in St. Louis, but about two years ago removed his journal plant and office to New York City, in which city he was building up a comfortable practice.

For many years Dr. Love was an active member of the American Medical Association and he took much interest in the healthy growth of this Association, and it has been due largely to his generous support of the Association that a number of the Western States came into line. Dr. Love was also very active in his own native State Society. For a number of years he was affiliated with the Association of Medical Editors, which nondescript body has enjoyed a varying rise and fall in interest and influence.

## PHILADELPHIA.

**Veto of Bill Establishing Homeopathic Wards in Philadelphia Hospital.**—Mayor Weaver has vetoed the bill recently passed by Councils authorizing the establishment of homeopathic wards in the Philadelphia Hospital. The Mayor stated that he was in sympathy with the thought that homeopathic physicians should have some part in the work of the hospital. The ordinance was not approved because it provided that the physicians and surgeons to be appointed should be nominated by the Hahnemann Medical College, thus transferring part of the executive power to one of the colleges.

**Largest Dental Class Before State Board.**—The largest class ever examined at one time by the State Dental Board came before that body June 11, when 186 applicants were examined in this city and 76 in Pittsburg. They were nearly all the graduates of the five dental schools in Pennsylvania. One applicant was before the board for the sixth time.

**Dr. Mitchell Deprecates College Football.**—Dr. S. Weir Mitchell, in a letter written for the Class Record of the University of Pennsylvania Seniors contrasts his own with the present college days, with no edification of the latter. Among other things he says: "The change from that day to this has been great, but I am clear in my mind that in some respects you have lost out of the college life that which it were better to have kept. Our sports were less violent than yours. We had no football or races or contests with other universities, but we played cricket, and played it well, too, and rowed on the river and sparred with the once famous Tom Barrett. We had no game which necessitated the attendance of a physician. It is needless to insist on what we missed and what, in consequence, my generation failed to be and to do—it is sadly interesting to speculate on what we might have been—for by this time you must all be aware that without college athletics no nation can long survive. Who can doubt that the discipline of the football field must have been terribly missed at the 'Bloody Angle' and on Cemetery Hill. You, I fear, care too little for your intellectual athletes and certainly do not decorate or publicly honor them or portray them in your class records as you do the football teams. As I remember, we regarded our honor men with a certain veneration and took such interest in our society debates as I hope still exists within the sacred walls of my own Philomathean. It is rather late to say to a graduating class that athletics have to-day too large a place in the life and talk of college men, and that the intellectual athletes of your class, whom in the future years you will delight to honor, will owe nothing to the football field or the race track. Athletic sports are meant, as I see them, to insure that the body shall be made and kept sound, enduring sound, so as the better to enable men to meet the demand of our energetic life. A distinguished surgeon said to me last night that hundreds of men are to-day suffering, and will continue more and more to suffer, from the injuries received in football. If this be the result, are we not justified in asking that this attractive sport should be so modified as to free it from the unwholesome consequences which must affect the competency of many active lives?"

**Schuylkill River to Be Inspected.**—At the time this letter is being written, arrangements for a tour of inspection by the health authorities for the purpose of ascertaining the source of pollution of the Schuylkill River have been completed by Dr. A. C. Abbott, Chief of the Bureau of Health. Accompanied by six assistant medical inspectors and six nuisance inspectors, Dr. Abbott will enter a launch at Reading and inspect the river below that point. At each suspicious place an inspector will be put ashore to investigate, and later will be required to furnish a complete report of any source of pollution. A special survey is to be made of the river below Flat Rock Dam in order to determine the extent to which Philadelphia sewage is contaminating the water supply of the city.

**New Rules for Milk and Meat Inspection.**—Mayor Weaver and Drs. Martin and Abbott recently met in conference representatives of the Milk Commission of the Philadelphia Pediatric Society and of the Keystone Veterinary Medical Association in order to discuss methods for improving the supply and inspection of the milk and meat used in this city. At that time a set of rules to govern the inspection of milk, approved by the Pediatric Society, were submitted. They were said by the authorities to be practicable, and will be enforced as soon as the Department is able to do so. The committee stated that the rules were not at all drastic, but that it was considered wise to begin with a comparatively low standard and elevate it as the dealers became accustomed to the changed methods. With the possibility of a Pasteurizing plant similar to the one endowed by Nathan Straus in New York in addition to improved sources of milk supply, the outlook for a diminished infant mortality is more bright than for many years. The rules submitted by the Pediatric Society are as follows: (1) That all milk sellers be required to obtain a license, to be granted free of charge; (2) that no license be issued unless the dealer is willing to state the source of his supply, and to give satisfactory evidence that the producer from whom he receives his milk maintains his herd and premises up to the standard prescribed by the Department of Public Health, the observance of such standards to be determined by periodic inspections under the directions of this same department; (3) that the standard to be established should correspond closely or exactly to the list of fifty dairy rules recommended by the Bureau of Animal Industry of the United States Department of Agriculture; (4) that dealers be required to remove all milk from the transportating trains immediately upon their arrival, unless in refrigerator cars, and to deliver the milk of the morning and previous evening on the day of its arrival, unless kept iced; (5) that dealers be required to have a special milk room so situated in relation to their houses as not to be a thoroughfare. That its walls shall be tiled or painted with a glazed paint; that its floors shall be made of hard wood, cement or other composition, or that they shall be covered with linoleum; that the room shall be well ventilated and kept thoroughly clean; (6) that it be required that all milk wagons be thoroughly cleansed after each delivery, and that they be so constructed that thorough cleansing is possible. That all utensils, such as dippers, etc., carried in milk wagons, when not in use, be kept in separate clean cans; (7) that no dealer or producer be permitted to deliver milk in bottles who has not on his premises satisfactory appliances for the proper cleansing and sterilization of bottles, and who does not properly use them; (8) that no dealer be permitted to fill bottles outside of his milk room. That dealers should be required to thoroughly cleanse and scald all milk cans before returning them to the producer.

## CHICAGO.

**Resignation of Dr. Christopher.**—Dr. W. S. Christopher, formerly Professor of Pediatrics in the Medical Department of the University of Illinois, College of Physicians and Surgeons, has tendered his resignation.

**Appropriation with Which to Combat Smallpox.**—The Finance Committee of the Chicago City Council has recommended an emergency appropriation of $10,000, to be used in fighting smallpox. At the present time, there are 39 patients with this disease at the isolation hospital.

**The New Hospital Ordinance.**—Under the provisions of the present ordinance dealing with hospitals, no hospital of any kind has a right to exist on any block in the city without having first obtained the written consent of all the persons owning property in the block, and also of all on the side of the street opposite the hospital building. After long discussion, the City Council has passed an amendment to this ordinance, limiting its application to such hospitals as can properly be classified as nuisances, and making two further changes in it. The first of these changes concerns the kind of residence districts in which the ordinance is effective. Instead of allowing the right of veto by the property owners in every part of the city, it allows it only in cases in which a hospital is located in any block in which two-thirds of the building fronting on both sides of the street or streets on which the proposed hospital may front, are devoted to exclusive residence purposes. The other change concerns the requirements as to frontage consents, and reduces them from the unanimous consent of all of the property owners in the block and across the street to a consent of the majority of such property owners.

**Congenital Dislocation of the Hip-Joint.**—Dr. H. A. White, of St. Charles, Ill., reported a case of successful reduction of a congenitally dislocated hip in a female child, three years of age, before the Chicago Medical Society, June 10. Dr. White began by making direct extension with a few rotary movements. The force was applied gradually and lasted ten minutes. The contracture of the soft parts was next overcome, especially the adductor muscles. Adduction was carried to such an extent that the muscles were torn subcutaneously, using the hand as a wedge, until their prominences could not be seen. Extension was made in rectangular flexion of the thigh, and he tried to replace it by forced adduction. After a few trials, and with the aid of the wooden wedges, the head slipped over the cotyloid ring into the socket with quite a perceptible snap. The operation was performed October 28, 1902; the plaster cast was removed May 3, 1903, and the child walked in four weeks. One limb was then three-quarters of an inch longer than the other, but absorption had continued ever since, and the inequality was disappearing. The author is one of those who is heartily in favor of giving Lorenz the credit of having perfected and shown the most feasible method of reducing congenital dislocation of the hip. The little patient walked around the room for the benefit of the members of the Society. The result was excellent.

**Fever Following Rat Bite.**—Dr. Francis R. Sherwood reported before the Chicago Medical Society a case of rat bite in a boy, aged eight years. The rat had been caught in a trap the night before, taken to a vacant lot by some boys for the purpose of turning it loose and killing it, and when the rat escaped from the trap, it ran over the boy's left foot and bit it over the inner malleolus. The bite was through the stocking. The wound healed promptly and caused the boy no trouble. At the end of three weeks he complained of pain in the foot and leg, headache, loss of appetite, and fever, which was reported to have reached 105° F. The fever continued off and on for about nine weeks from the commencement of the symptoms, or twelve weeks from the injury. He stated that Dr. William A. Evans had made a very exhaustive study of the literature of the subject of rat bites. Evans had reported two cases which occurred in the practice of his father. Both ran a similar course to the case of the essayist, except one had a more continued high fever. Dr. Evans has succeeded in collecting all of the cases reported up to date, which is 64, two in European literature, 26 from American literature, and 36 reported by Miyake, of Japan. In his review of the cases, Evans thinks that the diagnosis was somewhat doubtful in about ten cases. Many of the writers thought that there was a relation between the disease and rabies. In a number of the early cases, staphylococci and streptococci were found, probably due to secondary infections as the result of lancing and poultices. A few of the early cases died from this cause, and one from tetanus. The incubation period in most of the cases was from two days to four weeks. Miyake reports one as five to six hours, and another as four years. Miyake divides the disease into three forms: (1) Febrile form with exanthemata; (2) afebrile form, with mainly nervous symptoms; (3) abortive form, unimportant. The symptoms as given by Miyake are pain at the seat of the bite; fears; tired feeling; headache; dyspnea; small pulse; cold extremities; delirium; sensory and motor paralysis; collapse and death. The subacute variety has a well-marked incubation period, and most of the cases exanthemata, and lasts months or longer. The symptoms which Miyake gives in this form of the disease correspond very closely to those which the author found in his case, namely, reinflammation of the wound; pain in the muscles, breasts and limbs; hoarseness; anorexia; nausea; vomiting; feeling of oppression; feeble pulse; cachexia; anesthesia of the extremities (not present in the author's case); hallucinations; decrease in urine secretions; exanthemata and urticaria. The pathology is not understood. Examination of the urine was negative in the author's case. The examination of the blood and inoculation experiments were also negative. The prognosis of the disease is good, apparently self-limiting. Treatment was symptomatic. Patient made a thorough recovery, and was exhibited to the Society.

**Case of Elephantiasis Due to Filaria Sanguinis Hominis Nocturnis; Acquired Outside of Filarial Region.**—Dr. Mary M. S. Johnstone reported at the Chicago Medical Society, an interesting case of this disease, and exhibited the patient. The patient was a woman, sixty-eight years of age, who complained of dropsy. Her family history was negative. As a child, the patient had measles, mumps, chickenpox, and whooping-cough. Forty-five years ago she had brain fever; twenty years ago she had rheumatism in the right arm. When a young girl she had chlorosis, which was called at the time dropsy. The patient has had nine children. Her limbs always swelled during pregnancy. There is no specific history. The patient was born in Clinton County, N. Y.; she has lived in Milwaukee, St. Paul, and Mount Clemens. Forty-five years ago she lived in St. Louis, Mo., for one year, and after that, in the town of Mexico, Mo., for a month. While in St. Louis she drank river water which was very muddy, and even after filtering it was not clear. For the past thirteen years she has lived in Chicago. The swelling began in the left ankle in August, 1899; a year and a half later the right ankle and abdomen began to swell. The limbs were painful. The patient has indigestion and is troubled with constipation. At times, for twenty-one years, she has had a similar swelling of the legs, which has disappeared under treatment. She is rather despondent. The abdomen is bloated; there is a feeling of resistance and dulness on percussion over the left iliac and left lumbar regions. Some lymphatics in the hypogastric region are the size of a cord. The lower limbs are red, swollen, irregularly, pit on pressure; the skin is tense, shiny, rough and scaly. The clitoris and left labia major are enlarged and swollen. The urine examinations were negative. One blood smear taken at 9 P.M., fixed over fuming acetic acid, and stained with eosin, showed *Filaria*, $^1/_{100}$ by $^1/_{3200}$ inch. The pain and inflammation yielded to lugol solution, gtt. v, t. i. d. The author says there are records of eight cases of filariasis which have developed in the United States, north of the prescribed limits. Brief histories of these cases were given. The adult *Filaria* lives in the lymphatic system of man; the embryos are in the peripheral blood at night; by day in the lungs, heart and great vessels. The female mosquito takes the embryos with the blood. The larval form develops in the thoracic muscles of the mosquito in from seventeen to thirty days. The *Filaria*, freed in water at the death of the mosquito, after she has laid her eggs, enters man through the drinking water, or it is transmitted directly through the bite of the mosquito. Subjective symptoms occur only when the adult worm is disturbed. The embryos are the same diameter as a red blood corpuscle. If parturition is hastened, the ova, which are four or five times as broad, enter the circulation and produce an obstruction resulting in such troubles as chyluria and elephantiasis. The author believes that this case must have been acquired (1) either by living in a place where there was a person with filariasis and a mosquito capable of being intermediary host; (2) or directly through the bite of an infected mosquito, brought from a malarial region, probably with fruit. The only treatment is to kill the mosquitoes, filter and boil the drinking water.

## GENERAL.

**Chief of Division of Pharmacology.**—The United States Civil Service Commission announces that it is desired to establish an eligible register for the position of chief of division of pharmacology, Public Health and Marine Hospital Service. No merely scholastic or clerical tests will be given, and competitors will not be required to be assembled for examination. The examination will consist of the subjects mentioned below, which will be weighted as follows: (1) Education and technical training, including post-graduate work, 20; (2) technical or professional experience, 40; (3) publications on pharmacology or similar subjects, 40, making a total of 100. It is desired to secure persons having broad training and experience along the lines of pharmacology who will be fully qualified to undertake the original investigations devolving upon the pharmacologist of the Public Health and Marine Hospital Service. It is expected that in the rating of the papers of this examination the assistance of persons eminent in medicine or pharmacology will be secured. Age limit, 20 years or over. From the eligibles resulting from this examination it is expected that certification will be made to the position of chief of division of pharmacology, Bureau of Public Health and Marine Hospital Service (male), at a salary of $3,600 per annum, and to other similar vacancies as they may occur. This examination is open to all citizens of the United States who comply with the requirements. Competitors will be rated without regard to any consideration other than the qualifications shown in their examination papers, and eligibles will be certified strictly in accordance with the civil service law and rules. Persons who desire to compete should at once apply to the United States Civil Service Commission, Washington, D. C., for application Form 304 and special form, which should be properly executed and, with the material required, filed with the Commission at Washington prior to the hour of closing business on July 15. In applying for this examination the exact title as given at the head of this announcement should be used in the application.

**Physiological Economy in Nutrition.**—Prof. Chittenden, of Yale University, discusses the conditions of physiological economy in nutrition, in the June number of the *Popular Science Monthly*, with especial reference to experiments conducted in his own laboratory by Mr. Henry Fletcher. It appears that Mr. Fletcher has practised economy of the sort for five years past and has accustomed himself to a diet simple in nature and very small in quantity, but entirely satisfactory and adequate. It is composed of a prepared cereal food, of milk and of maple sugar and is palatable and sufficient, as it contains all the essentials. The details of one of his experiments, extending over six days, are given below, taking averages. Average daily intake for six days: Proteids, 45 grams; fats, 38 grams; carbohydrates, 253 grams; calorics, 1,606 grams; nitrogen, 7.19 grams. The corresponding average daily output was: Urine, 6.3 grams; feces, .60 gram; total, 6.90 grams. The main points to be noted are the very small intake of proteids and the fact that the total fuel value of the daily food was about 1,600 calories. Voit's values for a man doing moderate work are: Proteids, 118 grams; fat, 56 grams; carbohydrates (sugar and starch), 500 grams; total fuel, full value, 3,055 calories daily. These are very much larger than Mr. Fletcher's amounts, yet it is to be noted that Fletcher was in perfect health throughout, his weight (165 pounds) remained unchanged, his capacity for mental and for physical work was excellent —even much above what might be expected from a person fed in the ordinary fashion. Moreover, the result is now normal with him, as his practice extends over years. Note also that the daily cost of his food was but 11 cents—and remember that it was fully satisfying in quality and quantity. In view of these results it may reasonably be asked whether the practice now in vogue as to food does not need careful examination—whether the whole of the Western world is not living on a wrong and a wasteful basis. Continued experiments on many individuals are needed to settle the question. The presumption seems to be that a radical change in our standards of living can be made with immense advantage to this and to every future generation.

**Tuberculosis in Hawaii.**—The mortality report of the Board of Health for the last month shows an unusual percentage of deaths from tuberculosis. Almost 20 per cent. of the deaths were due to that disease.

**The Age at College Graduation.**—Prof. Thomas of Columbia University has discussed in the June number of the *Popular Science Monthly* nearly 20,000 records of college graduates with respect to their age at graduation. The general belief is that the American boy takes his A. B. degree a good deal older than his father took his and a great deal older than did his grandfather. The data lead to the conclusion that the increase in age has been much exaggerated. It exists only for certain institutions, while others show a decrease. The normal age at graduation is about 22½ years. If entrance into professional life is later than formerly, the reasons must be sought elsewhere than in the college. It is, however, no longer possible, as it once was, for a lad to take his degree at 20 years of age. But the young man now leaves college with very much higher attainments than his father or grandfather possessed.

**Louisville Academy of Medicine.**—Wednesday, June 3, at the Louisville Hotel, the Practitioners' Club and the Falls City Medical Society, of Louisville, Ky., met and amalgamated, forming the Louisville Academy of Medicine, with twenty-eight members present. The following officers were elected: Dr. Hugh N. Leavell, President; Dr. John J. Moren, Vice-President; Dr. Hugh R. Manning, Secretary, and Dr. W. A. Jenkins, Treasurer. A most interesting paper on "Tumor of the Kidneys" was read by Dr. Charles G. Lucas, who exhibited pathological specimen, removed at post mortem.

**Obituary.**—Carl Gegenbauer, the famous German anatomist, died at Heidelberg Monday last. He was born in Würzburg in 1826, and was a student at the university there under Kölliker and Virchow. After getting his diploma as physician, he devoted several years to anatomical studies, especially to an investigation of the lower order of animals in the Mediterranean region. In 1854 he was called to be professor of anatomy and director of the Anatomical Institute of the University of Jena. This post he held until, in 1863, he was elected to a similar professorship in the University of Heidelberg. He was the author of a number of works dealing with the anatomy, both of man and of animals.

Dr. Edward H. Everett died in Nashua, N. H., last week, aged fifty-nine years.

Dr. Leon H. Armstrong, fifty-two years old, who was born in Armstrong Mills, Ohio, and was a Surgeon in the United States Navy, died last week in Atlantic City, N. J., of paralysis. He was at the time of his death physician to the Board of Health in New York.

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## SPECIAL ARTICLE.

### OPENING ADDRESS DELIVERED AT THE FIRST ANNUAL CONFERENCE OF STATE AND NATIONAL HEALTH AUTHORITIES, UNDER THE ACT OF JULY 1, 1902, WASHINGTON, D. C., JUNE 3, 1903.

BY WALTER WYMAN, A.M., M.D., LL.D.,
OF WASHINGTON, D. C.;
SURGEON-GENERAL U. S. PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

I BEG leave to express my pleasure in meeting you at this assemblage, called by myself in accordance with Section 7, of the act of Congress approved July 1, 1902.

What may be the result of these annual conferences time must determine, but certainly we may consider the present, the first annual conference under the law, as a most noteworthy event. For the first time in the history of the United States there has been placed within its statutes, by the act of Congress referred to, a provision looking to harmonious and cooperative efforts in public health matters between the national government and the state governments.

This status has long been desired, but difficult of achievement by reason of our republican form of government. It has been difficult for the National government to extend its influence into State health matters without appearing to infringe upon the States' authority, and it has been difficult for the States, individually or collectively, to seek aid from the government without appearing to surrender authority reserved to them by the national constitution. In the meantime, however, the Marine Hospital Service, now bearing the title of the Public Health and Marine Hospital Service of the United States, has become so developed and strengthened, and the State health organizations have been so perfected, that a sentiment of respect, one for the other, has been established, finding its expression in this law of

1902, and, in particular, Section 7 above referred to.

To my mind the outlook is bright. The great problems to be solved in sanitary affairs; the great work to be done in the suppression, and even elimination, of disease, and the cultivation of health and strength, so that physically, as well as in other respects, the United States may take a leading position among the nations, are propositions which should not be considered impossible of solution, and a proper development under the terms of this law will be an important step in this solution.

One of the most important features of this assemblage is its official character. All of us are familiar with conventions of similar purpose, productive of much useful information but entirely lacking in official significance. Here, however, are assembled the legalized health authorities of the States, representing the practical administrative experience as well as the theoretical and scientific knowledge required in the consideration of public health affairs.

Many of you have devoted the best years of a long professional life to the consideration of the subjects which will come before us, having acquired, in individual instances and on special subjects, unusual knowledge and wisdom.

Combined effort appears to be a distinguishing feature of this new twentieth century. This is seen in nearly all forms of civic and commercial life and even scientific and professional effort. It would seem that when the history of the twentieth century is written there will be lacking those great and single characters looming way above the average, leading, directing, or dictating; instead, there will be an elevation of the average, the best individual effort will, neither in purpose nor effect, aggrandize the individual, but will be exerted in connection with other effort of like nature for the establishment of a parity of well being among all. This, I take it, will be the keynote of our action, bearing constantly in mind the actual results to be attained and being determined to attain them.

To refresh your memory I will now read Section 7 referred to, and also Section 8, which is somewhat analogous.

It will be seen that Section 7 provides for three kinds of conferences. First, the Surgeon-General may invite as many of the health and quarantine authorities as he deems necessary, not more than one from each State, Territory, or District of Columbia, to a conference, whenever in his opinion the interests of the public health would be promoted thereby. Second, a conference must be called at least once a year of all the States, Territories, and District of Columbia. Third, upon the application of not less than five State or Territorial boards of health, quarantine authorities or State health officers, he must call a conference, but in this event only those States joining in the request are to be called.

While the present is the first annual conference it is not the first conference called under the law. Last January upon the request of 22 States, a so-called plague conference was called to consider the situation in San Francisco. The proceedings of that conference in detail have been transmitted to each of you. The effect of it was undoubtedly very great in bringing about the present satisfactory status in San Francisco. The object of that conference was specific, but, as you will note, the law providing for the annual conference gives no details. We must assume, therefore, that the intent of the law is that we shall get together, and we are to decide ourselves as to the matters to be considered. It is evident that the conference is advisory in character, without changing in the least the present executive force of this Bureau of the Treasury Department.

It seems advisable at the outset, and for a satisfactory understanding of one another, to give a review of the laws and of the organization relating to the Public Health and Marine Hospital Service, and to receive in return an account of the same nature from each State delegate.

The laws especially relating to the United States Public Health and Marine Hospital Service can be found printed with the U. S. Quarantine Regulations, with the exception of the Sundry Civil Act approved March 2, 1901, which provided for a laboratory "for the investigation of infectious and contagious diseases, and other matters relating to the public health."

Having thus referred to the law, I propose now to describe the organization of the Bureau of the Public Health and Marine Hospital Service. For executive administration, the Bureau is divided into six divisions, each presided over by an Assistant Surgeon-General. There is, also, a Miscellaneous Division, presided over by an Assistant Surgeon, and the office of the Chief Clerk. The clerical force numbers about 20. These divisions are named as follows:

Division of Marine Hospitals and Relief.
Division of Domestic Quarantine.
Division of Foreign and Insular Quarantine and Immigration.
Division of Sanitary Reports and Statistics.
Division of Personnel and Accounts.
Division of Scientific Research.
Miscellaneous Division.

*Division of Marine Hospitals and Relief.*—To this division are sent all matters relating to the marine hospitals, 22 in number, owned by the Service, and to the patients, numbering 58,000, treated annually in these hospitals and in some 110 relief or contract stations. The Purveying Depot, a large building located in New York, is under the direction of this division, to which is also referred all matters relating to hospital supplies, including subsistence, drugs, hospital furniture, surgical instruments and appliances, plans and specifications for hospital construction, and the conduct of the sanatorium for consumptive patients at Fort Stanton, New Mexico, where the service has a sanitary ranch, 56 square miles in area, the buildings of the fort having been placed in perfect condition, the patients in the sanatorium numbering about 150. The scheme for this ranch embraces the removal of consumptives from our hospitals with a view to their improvement or recovery. Quite a large percentage have recovered, a number leave greatly improved, and all who desire can find employment after leaving in the same high, dry, and healthy locality. The hospitals are thus relieved from this contagious disease, and the vessels from which they come are subject to inspection and disinfection as to their forecastles or other quarters that have been occupied by known consumptive cases.

*Division of Domestic Quarantine.*—To this division are referred all matters relating to the national maritime quarantine stations, embracing 19 complete disinfecting stations, and 18 inspection stations. At the former are hospitals, barracks, disinfecting machinery, steamers, and small boats, all requiring constant care and attention. This division, also, must see to the expenditure of appropriations for new stations, involving purchase of lands, construction of piers and buildings, said construction being generally under the Supervising Architect of the Treasury on plans approved by the Bureau and the Department, but occasionally the bureau attends to this construction itself. To this division are also referred all matters relating to the quarantine regulations and their interpretation. Matters relating to interstate quarantine and suppression of epidemic diseases are also handled in this division. Quarantine upon the Mexican and Canadian borders is also conducted through this division.

*Division of Foreign and Insular Quarantine and Immigration.*—To this division is assigned the management of the national quarantine stations in Hawaii, Porto Rico, and the Philippine Islands, the supervision of officers detailed for duty in the offices of the United States consuls in foreign ports, who sign the bills of health with the consuls. At present there are three officers in Japan, Yokohama, Kobé, and Nagasaki; two in China, Shanghai and Hongkong; one in Naples, Italy; ten in Cuba, three in Havana, one each at Cienfuegos, Santiago, Nuevitas, and Matanzas, and several at subports; four in Mexico, two at Vera Cruz, one at Progreso, and one at Tampico; six in the fruit ports of Central America, namely, Bocas del Toro, Columbia, Port Limon, Costa Rica, Bluefields, Nicaragua, Ceiba and Puerta Cortez, Honduras, Livingston, Guatemala, and Belize, British Honduras.

To this division are also referred all matters relating to the medical inspection of immigrants, a most important function of the service, requiring the detail of a large number of officers.

*Division of Sanitary Reports and Statistics.*—This division is charged with the preparation of the Public Health Reports, published weekly by the Bureau. All matters of a statistical nature are referred to it.

It may be of interest to state that some question has arisen as to whether the work of this division, which is authorized both by the law of 1893 and the law of 1902, may not duplicate the work of the Census Bureau, but I am pleased to state that after conference with the Chief Statistician of the Census Bureau and others connected therewith, it has been found that there need be no duplication or interference by one bureau with the other; on the contrary each will be helpful to the other. The Census Bureau, in addition to the decennial census, will publish an annual census of mortality and births, but the weekly and monthly reports will be published as heretofore by this bureau, and morbidity reports, which are so much desired and which will require special organization to procure, will be undertaken by the Public Health and Marine Hospital Service.

*Division of Personnel and Accounts.*—To this division are referred all matters relating to the personnel of the service, examinations for admission to the corps of commissioned officers, examinations for promotion, appointments and resignations, appointment of boards for the physical examination of officers of the Revenue-Cutter Service. This division has, also, charge of the bookkeeping of the service.

*Division of Scientific Research.*—This division might be better called the Division of Scientific Research and Sanitation. To it is referred all matters relating to the Hygienic Laboratory. It should be understood that this laboratory, or the staff thereof, is not a part of the bureau proper, though at present located in the same building. A new building, however, is just completed, located on the grounds of the old Naval Observatory, about half a mile west of the White House on the river bank. Five acres of this tract were turned over from the Navy Department for the establishment of this laboratory. It will give the director of the Laboratory great pleasure to arrange with the delegates to this Conference to show them this building. The laboratory has an advisory board, consisting of a delegate from the Army, not yet named, Dr. Urie of the Navy, Dr. Salmon, Chief of the Bureau of Animal Industry; Professors Welch, of Johns Hopkins; Flexner, of Rockefeller Institute; Sedgwick, of the Massachusetts Institute of Technology; Vaughan, of the University of Michigan; and Wesbrook, of the University of Minnesota. Under the law of 1902, three new divisions were added to the laboratory, the Division of Bacteriology already existing. These three new divisions are those of Zoology, Chemistry, and Pharmacology. But one of these new divisions has been organized, namely that of Zoology, and the good results of this new organization are manifested in the recent discoveries and published report of the Chief of this Division, Dr. Stiles, upon the Prevalence and Geographical Distribution of the Hookworm. Bulletins, embodying important results of investigations, are published from time to time under the supervision of the Director of the Laboratory, Dr. Rosenau. It is believed that Congress can be influenced to provide for the extension of this laboratory by the erection of new buildings from time to time as the necessity therefor becomes demonstrated.

To this Division of Scientific Research and Sanitation are referred special requests for scientific investigation of special diseases, as for example the recent investigation of the so-called spotted fever of Bitter Root Valley, Montana. The initiatory steps for special investigations of this character are taken in this division, but any prolonged or technical work connected therewith is turned over to the laboratory.

Requests for special investigations of water pollution or local causes for the spread of typhoid fever are referred to this division.

The officer in charge of this division examines all current literature relating to scientific medicine or sanitation and keeps a card index of the same.

*Miscellaneous Division.*—The Miscellaneous Division has charge of the mailing of all bureau publications, and certain miscellaneous duties relating to the reports of necropsies from the marine hospitals, the medical examination of claims for benefits on account of injuries received by the crews of life-saving stations, certain matters relating to the annual report, etc.

Under certain bureau orders the operations of these several divisions are coordinated so that the work of one division, where it affects the personnel or duties connected with another division, is accomplished with the full knowledge and acquiescence of the other. There are also two regular Bureau Boards for the careful consideration of matters referred to them—namely, the Service Board and the Sanitary Board.

*Yellow Fever Institute.*—There is one other feature of the bureau, assigned to no one particular division, but embracing all, namely, the institute for the study of yellow fever, called the Yellow Fever Institute, with which most of you are familiar. This institute was founded about two years ago for the purpose of learning all that could be learned about yellow fever, including its etiology, and to bring to this work the aid of all reputable physicians who might desire to take part therein, its membership including, besides the officers of the Marine Hospital Service, special investigators both in this and foreign countries. It is divided into four sections, the chairman of each section being one of the division officers of the Bureau to which, under bureau organization, matters of a kindred nature would naturally come. These, together with the chairman and secretary of the Institute, form an executive board to consider, especially with regard to publications, the contributions received from the members. Twelve bulletins have been issued. A thirteenth, and the most important of all, relating to the cause of the disease, is now being printed and will be ready for distribution within a few weeks. This bulletin contains the report of a working party sent to Vera Cruz last summer to investigate and attempt to find the causative agent of the disease. Their work was continued during the winter with the material obtained in Vera Cruz, and gives evidence that progress has been made toward a final result. A second working party of three, two of whom were in the first party, are now in Vera Cruz and vicinity pursuing a continued investigation, and it is the purpose of the institute to continue in the prosecution of this work until successful. This Institute embraces new features in the investigation of the cause of a specific disease, and if it proves successful with regard to yellow fever it may be that the new features of organized effort which it embraces will be applied to the investigation of other diseases.

Other important matters engaging the attention of the service are the proposed legislation for the establishment of a national leprosarium in which may be received the occasional cases of leprosy found in the States and which give the local and State authorities so much trouble; also the enforcement of the new regulations relating to the examination and licensing of establishments for the production of vaccine, serums, and antitoxins, under the law passed by the last Congress. These regulations go into effect next August.

Mention should also be made of the connection of the service with the International Sanitary Bureau of American Republics, established in accordance with resolutions of the Conference of American States held in the city of Mexico winter before last.

*The Medical Corps.*—Finally, with reference to the service work, I wish to say a few words with regard to the medical corps, numbering 108 commissioned medical officers received into the corps only after a thorough examination as prescribed by law, appointed first to the lowest grade, and promoted to the higher grades only after further successful examination. The discipline of the corps is military in character, the regulations for its uniforms and government are prescribed by the President, its officers, by reason of unusual responsibilities, continuous medical and surgical care of the large clientele, and by special scientific instruction in its Hygienic Laboratory, are kept in the van of professional excellence. There are, however, nearly two hundred acting assistant surgeons, some of whose appointments are temporary in character, but a number of whom have been long in service by reason of especial adaptability or because the arrangement made with them is necessary in the interest of economy. These officers of the medical corps are stationed in all parts of the United States and its dependencies and constitute our reliance not only in the ordinary work of the service but in times of special need.

*Conference Organization.*—I have deemed it necessary to give this somewhat extended account of the organization of the service, both that our aims and methods may be understood and that I may the more readily explain a proposed method of making these annual conferences of practical utility. It might be advisable to appoint on special committees members of the conference especially interested in the several subjects to be considered by these committees, said committees to remain in organization during the year and to receive for further conference with the Surgeon General such matters as might be pertinently referred to them by him. The titles of these committees would find their analogues in the several divisions of the Bureau. The reports of these committees could be read to the full conference at its annual meeting, and, if adopted by the bureau and the conference, would have a force and influence which would naturally result from the conjoint action of the national and state authorities. I would suggest tentatively a committee on Scientific Research and Sanitation, second on the Prevention and Spread of Epidemic Diseases, third on Morbidity and Mortality Statistics, fourth on State Legislation, fifth on Education. In addition to these, there might be special committees on certain specified diseases, namely, Cholera, Yellow Fever, Plague, Smallpox, Tuberculosis, Leprosy, Typhoid. Fever. To these committees might be committed such resolutions as may be offered here, but the adoption of any resolutions by this conference, it seems to me, should not be until after a report thereon had been made by the special committee to which it is referred.

It is believed that the above plan is at least worthy of trial. It would give real aid and would stimulate the members of the committees in an investigation of the subjects confided to them, and might produce a uniformity of effort, a coordination of work in different parts of the country, which now does not obtain.

## CORRESPONDENCE.

### THE MADRID BULL-FIGHT.

*To the Editor of the* MEDICAL NEWS:

DEAR SIR: Enclosed please find a few souvenirs, which will give you a good idea of the bull-fight held in Madrid on April 26, 1903. I cannot say that I approve of this sort of sport, but like many others who arrived prior to April 19, I had plenty of time on my hands and a large amount of curiosity.

I was impressed from the first with the great vitality of the beasts, and at the apparent difficulty with which the swordsman labored in an effort to sever a vessel in the thorax sufficiently large to cause bronchial or fatal hemorrhage. This proved of such great interest to me that I resolved to attend the bull-fight of April 26.

In this fight *six bulls were killed,* and in three instances I witnessed a swordthrust in the thorax from three to five times without apparent injury to the larger pulmonary or other vessels. (No bronchial hemorrhage, and the beast still fighting hard). I was especially interested in these observations, as I have done considerable experimenting with the organotone in an attempt to ascertain just how difficult it really was to puncture some of the larger vessels in the thorax, and I found where an instrument as delicate as the organotone was used, it was almost impossible to puncture a vessel at all.

Another interesting observation was the apparent absence of pneumothorax after certain sword thrusts, and at a time, too, when the lungs were working under forced inspiration, the beasts being very tired. The sword thrusts, in these particular instances, did not seem to weaken the animals in the least as they continued to fight hard until the fatal thrust. Prof. Osler drew my attention to the fact that a hypodermic needle had caused pneumothorax, and this prompted me to conduct a series of experiments along these lines. I found I could make any number of organotone punctures in the lung, and any time within twenty minutes, an hour or a day I could kill the animals, remove the lungs, sink them in water, and after the highest possible inflation there was not the slightest leakage, but if the dead lung was punctured the leakage was very considerable.

The excursion to the Escurial would have been larger had it been more thoroughly advertised.

Hoping this may prove of at least slight interest to you, I remain,

Yours very truly,
W. BYRON COAKLEY.

New York, May 29, 1903.

## TRANSACTIONS OF FOREIGN SOCIETIES.

### French.

THE DANGERS OF SUBCUTANEOUS INJECTIONS OF GELATINIZED SERUM—ASSOCIATED NEOPLASMS—TRANSITORY TACHYCARDIA OF ALCOHOLIC ORIGIN—ON THE PRESENCE OF PNEUMOCOCCUS IN THE BLOOD OF PNEUMONIA PATIENTS—THE SITUATIONS OF CUTANEOUS ANESTHESIA IN TABETICS AND THEIR RELATIONS TO GASTRO-INTESTINAL CRISES—ON THE ACTION OF INTRAVENOUS INJECTIONS OF GELATINE ON THE COAGULATION OF THE BLOOD—ON THE TUBERCULOUS INFECTION OF A DOG BY WAY OF THE DIGESTIVE APPARATUS—INHALATION OF AMYL NITRITE AS A MEANS OF TREATING HYSTERICAL SEIZURES—PSEUDONEOPLASTIC EPITHELIAL INFLAMMATION—CHRONIC INFANTILE RHEUMATISM—ACIDORESISTANT BACILLUS IN SYPHILITIC PATIENTS.

M. CHAUFFARD, at the Academy of Medicine, April 7, 1903, read, at the suggestion of a case of fatal tetanus consecutive upon a subcutaneous injection of gelatinized serum, notes of which had been addressed to the Academy by MM. Lop and Murad (Marseilles) a report in which he recalled a similar accident which he had witnessed seventeen months ago in the same circumstances and under the same conditions, and stated that in a certain number of cases, also there had been reported abscesses which contained anerobic microbes. It appears at the present time to be well proven that it is to the impurities of the gelatine employed and to its imperfect sterilization that one must refer the cause of these attacks of tetanus. In order to prevent the recurrence of similar facts, the author suggested submitting a note to the proper authorities as to the suitable method of preparing gelatinized serum, and to control its manufacture by various laws and regulations, such as are now in force concerning the marketing of organic serums.

M. POTHERAT, at the Society of Surgery, April 3, 1903, said that a recent communication by MM. Monad and Guinard had been presented to the society as to the association of neoplasms. For his part, he had found 11 cases of fibroma uteri coincident with cysts of the ovary. In one case in which there was a voluminous cyst of the ovary containing at least 18 liters of fluid, he was satisfied with the mere removal of the cyst, leaving the fibromatous uterus behind, as suggested by the family physician, who was assisting at the operation and feared lest the removal of the uterus also would augment the gravity of the operation. The woman recovered perfectly from the ovariotomy, but she has had and is still having severe hemorrhages from the womb, which have made him regret that he did not remove this organ at the operation. As a general rule he thinks it is better to remove fibromata of the uterus at the same time as the cyst of the ovary.

M. **Triboulet**, at the Medical Society of the Hospitals, April 3, 1903, related observations of two patients afflicted with transitory tachycardia of alcoholic origin. In the first individual the pulse, which showed between 130 and 140 beats a minute decreased at the end of a week under the influence of rest in bed and a milk diet, first to 116 and finally to 88 beats to the minute. The same treatment brought about the identical results in the second patient at the end of six days. Since to all appearances these functional disorders are due to inflammatory changes in the pneumogastric nerve, it is proper to ask whether these preliminary alterations, functional in character, may not bring about a certain predisposition which later favors the appearance of a true neuritis in the branches of these nerves which go to the heart, which in turn may produce chronic symptoms and even a fatal result.

M. **Widal**, at the same society, said that it is a familiar tact that typhoid bacilli may easily be found in the blood of patients afflicted with enteric fever, by the simple method of inoculating the blood in large quantities into bouillon (5 c.c. of blood into from 300 to 500 c.c. of bouillon or peptonized water). It would be interesting to make researches as to whether, by this same method, one might not discover the presence of pneumococcus in the blood of pneumonia patients. He has recently been studying this point with MM. Le Mierre and Gadaud. Eighteen subjects of pneumonia were involved. From six they isolated the pneumococcus; 12 cultures remained sterile. Among these 12, only two of the patients died, while the other ten fully recovered. Of the six cases which gave positive results, four were cured, and these four were concerned in a grave degree of pneumonia with symptoms of profound infection. The two who died passed away with asystolia and with pneumococcic meningitis respectively. The inoculations were carried out between the fourth and the eighth day. Their conclusions are in agreement with those of other authors, and to the effect that when pneumococcus appears in the blood of pneumonia patients, this fact does not mean a necessarily fatal issue, but certainly denotes that the case is one of great gravity.

M. **Eitz**, at the Society of Biology, April 4, 1903, stated that he has been carrying out researches in 67 tabetics as to the anesthesia of the thorax and its practically constant coincidence with the appearance of gastric crises. In one woman who presented an intestinal crisis, a true type, without participation from the stomach, the zone of cutaneous anesthesia, instead of being situated in the thorax, extended over the upper region of the abdomen, beginning at the xiphoid cartilage, and almost reaching the pubic region, and therefore representing the period innervated by the nerves from the seventh to the twelfth dorsal, inclusive. When the visceral crisis is ended, these anesthesias should disappear at once if the tabes is in the initial stage; later there persists over the same territory a certain degree of hypoesthesia, more pronounced toward touch than toward pain. Subjects who never have had gastric crises do not show as a rule, any anesthesia over the thorax. He decides, therefore, that an examination of the thorax in difficult cases may make a diagnosis possible between tabes dorsalis with gastric crises and other diseases due to changes of the stomach itself, which show themselves with vomiting.

M. **Glay**, at the same society, April 4, 1903, read a paper on the action of intravenous injections of gelatin upon the coagulability of the blood, stating that it is several years since MM. Gastre and Floresco gave voice to the opinion that gelatin administered into the veins in a 5 or 10 per cent. solution will increase the coagulability of the blood. Recently, with the aid of M. Camus, Glay has repeated the experiments of these two authorities, and has proved that the coagulating power of gelatin is nil, provided that previous to the injection of it into the veins, exact neutralization is obtained. Since this series of experiments he has conducted another with M. Richaud, which have tended to prove that the gelatin of commerce always obtains an appreciable quantity of chloride of calcium, varying between two and five per cent. In this line of work it is proved that when gelatin free of chloride of calcium is injected into animals, it tends naturally to lessen rather than to augment the coagulating powers of the blood. Through these two lines of research he believes it possible to conclude that the pretended properties of gelatin in coagulating the blood are ascribable in reality to the acid qualities of this substance, and to the salts which it contains.

M. F. **Alornd** (Lyons), before the same society, submitted a note according to which the ingestion of the human *Bacillus tuberculosis* is capable of infecting the digestive tract of a dog in three out of seven cases, or practically in 42 per cent. of the observations. These intestinal tuberculoses became generalized twice, and caused tuberculosis of the spleen and lungs. Twice, also, in the absence of all macroscopic and microscopic lesions in the gastro-intestinal tract, the lymphatic nodes about the stomach were shown to be tuberculous. This curious observation shows that the human *Bacillus tuberculosis* may pass through the intestinal mucous membrane, itself healthy, without leaving traces of its transit, and may then infect the whole organism. These facts impose a certain reserve as to stating where lies the door of entrance of pulmonary tuberculosis. Absence of intestinal lesion may not forbid the supposition that the infection came through the gastro-intestinal tract.

M. **Hertz** communicated to the Medical Society of the Hospitals, April 3, 1903, in the name of M. Loust and himself, observations of two women afflicted with hysteria, whose symptoms disappeared practically instantly after inhalation of amyl nitrite. In the first case the woman was twenty-six years old, and for three weeks had shown hemicontracture, hemianesthesia and asphasia. The second individual was a fifty-five-year-old man, who presented hemiparesis, hemianesthesia and stammering.

M. **Rammond**, at the Society of Biology, April 4, 1903, stated that the injection of talc, charcoal, subnitrate of bismuth and naphtol, finely divided into powder, into the uterus, followed by a ligature of the canal, will bring about, at the end of a month, a reaction in the kidney very different from that obtained by Straus and Geumond after ligature alone, in certain ways. In brief, there is the pseudoneoplastic epithelial proliferation of manifest degree, but this proliferation, no matter how intense it may be, does not pass the walls of the canal, and in other words, is not infecting. It presents, when compared with true cancer, the same features which pseudotubercle shows when caused by inert foreign bodies toward true *Bacillus tuberculosis.*

M. **Bardier**, at the Medical Society of the Hospitals, April 3, 1903, reported two cases of chronic infantile rheumatism which he had seen in two children, respectively thirteen and fourteen years old, who were both afflicted with chronic rheumatism accompanied by deformity of the hands and fingers. The index and little fingers of each hand, in particular, presented an incurvation of the distal and middle phalanges, with its concavity directed toward the axis of the hand, and showing the so-called pincer deformity of Homard. Radioscopy showed that this deformity was due to alteration in the periarticular tissues of fibrous character, which shows that such inflammation is in children of the true fibrous type.

MM. Rippan and Henrob (Nantes) at the Society of Biology, April 4, 1903, presented a note in which they claimed to have established the existence of acidoresistant bacilli in the scrapings from hard chancres, mucous patches and similar syphilitic lesions. These bacilli are identical with those discovered by Lustgarten in the same lesions. This micro-organism has also been found in the urine of a number of syphilitic patients in the proportions of three to seven, and in one case it was found in the urine of a patient at the commencement of and during the course of a reinfection.

## SOCIETY PROCEEDINGS.

### HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

*Regular Monthly Meeting, held Saturday, March 28, 1903.*

The President, Frank H. Daniels, M.D., in the Chair.

The scientific business of the evening consisted of a demonstration of the Riva-Rocci sphygmomanometer by Dr. George E. Brewer. This is the instrument invented in Italy which is now employed at many surgical clinics, especially at Johns Hopkins in this country, for the clinical estimation of blood pressure and its relation to shock.

**Development of Knowledge of Shock.**—Dr. Brewer said that shock was recognized as a distinct pathological entity by surgeons for a long time before any definite knowledge of its causation was obtained. It was noted that in about 90 per cent. of the cases of shock death took place from respiratory failure. Over thirty years ago, Goltz tapped the mesentery of the frog when the abdomen was opened and even the slight blows with the scalpel caused respiratory arrest and the symptoms of shock in the animal. This was the first experimental demonstration in the subject. Blum considered that shock was due to reflex along the pneumogastric nerves from abdominal irritation. Crile, in our own time, was the first to make the subject clearer than before and to show that in all shock there is first a period of high blood pressure, followed by low blood pressure and death.

**Source of Shock.**—Crile's experiments demonstrate that there is a paresis of the vasomotor mechanism which interferes with blood pressure and consequently so alters the general circulation as to set up serious reflex and nutritional disturbances in the nervous system. The more highly specialized are the nerves leading to the injured part and the more abundant the nerve supply the more reflexes are set up whenever trauma occurs. Hence wounds of the skin cause more shock than deep wounds affecting muscles and bones. If a large superficial area of skin is injured, even though the injury does not go far beneath the surface, shock is apt to be extensive. All wounds of the nervous system itself and manipulations of the nerve substance are alikely to be followed by considerable shock. The pyloric region of the stomach and the neighborhood of the gall-bladder are especially likely to be sources of considerable shock if surgical manipulation of these structures becomes necessary. Injuries to nerve trunks, especially if of any extent, produce extensive shock. Injuries of muscles and still less of bones are not followed by much shock.

**Anticipation of Shock.**—In certain operations, especially in those upon the abdominal organs involving much manipulation, the surgeon expects to have considerable shock occur. The important element in these cases is to recognize the occurrence of the premonitory symptoms of shock and anticipate its bad effect partly by hastening the operation and partly by taking such other measures as may be deemed necessary. For this purpose the Riva-Rocci sphygmomanometer proves of distinct service. Long before any disturbance of the circulation by means of the pulse can be noted there is a distinct drop in blood pressure, which constitutes the danger signal of approaching shock. This is no merely theoretic consideration, but has been demonstrated over and over again, by surgeons in practical work. Harvey Cushing at Johns Hopkins has found in a large number of cases that the Riva-Rocci instrument controlled by the anesthetist is an almost infallible sign of index for the approach of shock and gives definite information long before any change in the pulse-rate can be noted. The observations in this matter have been confirmed by Crile whose studies in shock put him in the position of an authority in this matter.

**Technic of the Application of the Instrument.**—The Riva-Rocci sphygmomanometer consists of a column of mercury that under the influence of blood pressure rises to a certain height. The force of the blood pressure is exerted on the instrument by means of a hollow armlet, which is passed around the arm above the elbow and inflated with air by means of the bulbs of a Paquelin cautery instrument until the pressure of the armlet filled with air causes complete obliteration of the pulse. Sufficient air is then allowed to escape from the apparatus until the pulse just becomes distinctly palpable once more. Under the influence of the pressure within the instrument under these circumstances the column of mercury in the tube is supported at a definite height with slight variations due to the modifications of blood pressure immediately following the heart beats. The instrument is not difficult of application and while it requires some practice to differentiate normal and abnormal conditions this is not more than may be reasonably expected from the ordinary careful anesthetist.

**Intermittence of Tests.**—Dr. Brewer said that the pressure exerted upon the armlet, is allowed to continue only for a short time and never any longer than is necessary to take a single reading of blood pressure. Every three to five minutes the pressure is once more exerted by means of the bulbs mentioned and a new test taken. A distinct drop in the record of blood pressure is a danger signal that must not be neglected and indicates the need for haste in concluding the operation and taking other measures to prevent the development of impending shock.

**Demonstration of Sphygmomanometer.**—Dr. Brewer then demonstrated on the arm of one of the physicians present the action of the Riva-Rocci instrument and showed how the upper level of the mercury obeys the up and down curve of blood pressure that corresponds with the heart beat. He demonstrated also that if the instrument be left inflated for some time it might easily cause the individual on whom the test was being made considerable inconvenience. In response to the question of how much experience is required, Dr. Brewer said that after the use of the instrument even a few times a good working idea of what it indicated was not difficult to obtain. He conceded that the result obtained from the use of the instrument depended somewhat on the personal equation of the observer. It is not an instrument of absolute precision for two successive observers may not fix the air pressure of the instrument at just the same point the one considering that the pulse can be distinctly recognized after preliminary obliteration at a time when another would scarcely consider the pulse palpable.

Dr. Brewer said that all recent observations point to the fact that surgical shock is due to a breaking down of the delicate vasomotor mechanism which controls the dilatation and contraction of the capillaries and so rules blood pressure within the body. When this breaking down occurs, the ordinary forms of stimulation serve no effective purpose. The heart muscle itself is not exhausted and so heart stimulants, though so frequently employed and so highly recommended, are not indicated. The difficulty does not lie in the lack of power on the part of the heart to drive the blood through the arterial system, but on the fact that dilatation of the capillaries leads to accumulation of blood in certain parts of the body and so disturbs the circulation as not to allow the return to the heart of the blood on which it could exert its force. With regard to the vasomotor mechanism and the capillaries themselves, they are already overstimulated and exhausted and further stimulation will only make matters worse. Intravenous salt infusion does seem to accomplish something at times but does not give uniformly good satisfaction.

**Crile's Pneumatic Suit.**—Crile's studies in shock and its physiology have led him to the invention of a pneumatic suit. This consists of a garment so constructed as to be inflatable with air. After being put on the patient this suit is pumped as full of air as is considered necessary to increase blood pressure in the particular case. This device has given excellent satisfaction in Crile's own hands and Dr. Brewer has found it of apparently good service in a case in which there was every reason to fear that serious and perhaps even fatal shock would result from surgical intervention. The theory on which the suit was invented seems rational and as its effect is mechanical, and it can be demonstrated that it does actually produce an increase in blood pressure; the further use of the device would seem to be called for until such time as surgeons can decide as to actual value.

**Illustrative Case.**—In Dr. Brewer's case for which the pneumatic suit was employed the patient had suffered for five days from severe symptoms of intestinal obstruction. At the time when operation was undertaken there were symptoms of considerable shock and as it was expected that operation would demand no little manipulation of the intestine this would add greatly to the shock. The operation lasted for an hour and a quarter. At the end of that time the patient's condition was exactly as good as at the beginning. Never during the operation was there the slightest feeling of the necessity for hurry in its completion. The intestines were so much dilated that they had to be evacuated and the openings thus made carefully sutured before the patient could be considered to be in condition to leave the table.

**Adrenalin for Shock.**—Recently, on theoretic grounds, the intravenous injection of a dilute solution of adrenalin has been recommended for shock. There is no doubt that adrenalin stimulates unstriped muscular fiber and that it must consequently have an effect in causing contraction of the arterioles and capillaries with a consequent rise in blood pressure. Striking effects can be produced by its use. In a recent case under Dr. Brewer's care the patient suffering from Basedow's disease in severe form had all the symptoms of hyperthyroidism. In order to relieve the condition one-half the thyroid was removed. Shortly afterward the pulse became uncountable, the patient became cyanosed all over and there was evidently a marked general vasomotor paresis. Fifteen minims of Parke, Davis & Co.'s adrenalin was diluted with 1,000 c.c. of normal salt solution and its injection directly into the vein begun. Before much more than one-half of the solution had been injected there was complaint of precordial pain and apparently too much blood was being sent to the heart. Since then, this remedy has been tried in a number of other cases at Roosevelt Hospital and has given good satisfaction in most of them.

**Lack of Effect of Digitalis.**—Dr. Reynold Wilcox in discussing Dr. Brewer's paper said that the present position of surgeons with regard to the uselessness of heart stimulants in shock is a reflection of the position occupied by therapeutists for a long while. Shock is due not to the heart, but to the blood vessels. There is no use in employing digitalis, though this remedy is so often recommended. No effects will be seen from digitalis under 72 hours after its administration. If shock is anticipated as the result of operative measures, then digitalis might be used beforehand for its effect in raising blood pressure and consequently as a prophylaxis of shock. If begun 72 hours before there will be contraction of the blood vessels sufficient to minimize all ordinary symptoms of shock. Dr. Wilcox considers that the pneumatic suit invented by Dr. Crile represents a mechanical solution of the problem of shock that should be followed up persistently by surgeons in order to decide its absolute value. There seems no doubt that on theoretic grounds it should be of very great service in this serious and hitherto intractable condition.

**Danger of Adrenalin.**—Dr. Wilcox said that the symptoms noted in Dr. Brewer's case show what the danger of adrenalin may be, in cases of threatened shock. The stimulation of the unstriped muscular fiber in the capillaries may lead to a rise of blood pressure, before the heart muscle is stimulated sufficiently to overcome the difficulty thus presented. This will for a time cause interference with the heart contraction and explains the pericardial pain of Dr. Brewer's patient. These pseudo anginas occur under other circumstances and are familiar to the physician, there being a certain amount of overdilatation of the heart as the result of spasm of the capillaries in many other conditions.

**Surgical Shock and Hemorrhage.**—Dr. Wilcox pointed out that not only are there many close analogies between surgical shock and internal hemorrhage, but both conditions may be considered to be due to latent hemorrhage. Surgical shock is an accumulation of blood in the splanchnic area. In a word the patient bleeds into his own dilated blood vessels in the abdominal region. These become so distended that they may hold the major part of the blood in the body. Concealed hemorrhage is as a rule a bleeding into the belly cavity or into a hollow viscus. In either case the symptoms will be almost alike and will depend to a large extent on the absence of blood at the brain and the difficulty of heart action because of the presence of insufficient blood properly to stimulate normal heart contractions. Hence the difficulty of differentiating these conditions, surgical shock and hemorrhage and the care that must be exercised not to confound one with the other. Hemorrhage of course requires surgical treatment. Shock is best treated by mechanical or medical measures.

**Excess of Adrenalin.**—Dr. Wilcox warned against the too liberal use of adrenalin or its employment except under careful supervision and when absolutely indicated. In weak individuals particularly, excessive amounts of adrenalin may be followed by such disturbance of the circulation and especially of the heart's action that the circulatory equilibrium will not be restored before serious damage has been done. Overdilatation of the heart, as evidenced by the precordial pain noticed in these cases, may become so pronounced as to injure the heart muscles or cause even fatal collapse.

This is especially true in anemic patients and in the old in whom shock is most liable to occur.

**Strychnine Often Overdone.**—Dr. Robert H. Greene said that in cases of shock he has long been of the opinion that too much strychnine was employed and too much confidence placed in the drug. The effect of strychnine is quite as if one would whip a tired horse when it is already laboring as much as possible with an uphill pull. He has found that intravenous injections act for too brief a period and has found that high enemas of warm salt solution are quite as effectual, and, being more slowly absorbed, give good results for much longer periods. Dr. Greene is doubtful if either is superior to chloroform in cases where shock already exists, though in states of beginning collapse there is something to be said in favor of chloroform and many good authorities consider it distinctly preferable.

**Rapidity of Operation.**—Dr. Fuller said that in cases of shock or where there are any preliminary symptoms pointing to the occurrence of this condition the most important thing for the surgeon is to operate rapidly and so shorten manipulations on which the increase of shock depends. The use of Crile's suit would seem to be of no avail and skill and rapidity in operation are the only factors that must count in the prevention of the serious conditions that develop as a consequence of shock.

Dr. Walker said that Professor Halstead of Baltimore is using the Riva-Rocci sphygmomanometer in all operations with great satisfaction.

**Shock as General Vasomotor Paresis.**—Dr. Howard Lilienthal said that while shock has been studied with excellent results in recent years the knowledge thus far gained is not of as much practical value as might be hoped for. While shock is now apt to be considered a bleeding of the patient into his splanchnic veins there does not seem to be any good reason for limiting this intravenous bleeding to the abdominal area. In collapse patients are pale all over, showing that the vasomotor paresis is generalized. It would seem that there may be general venous dilatation in cases of shock. There is no doubt that the most shock is apt to occur whenever there is much interference with the nerve supply and consequently reflexity with the nerve supply of the abdominal viscera. The definition of shock should not, however, be limited absolutely to abdominal effects. With regard to the treatment of shock Dr. Lilienthal considers the use of the suit suggested by Dr. Crile as a refinement that seems very unlikely to come into general practice. The use of elastic bandages before an operation in order to squeeze the blood out of the part, which has been adopted as a practice in surgery for many years now, has probably something of the same effect.

**Recognition and Treatment of Shock.**—With regard to the Riva-Rocci sphygmomanometer he is inclined to the opinion that its practical use will require considerable experience and that if the surgeon is to depend on the anesthetist in this matter the latter will have to be an expert in the use of the instrument. Even then the recognition drops in blood pressure is dependent to no slight degree on the personal equation of the observer for while one man after obliteration of the pulse by the inflated bandage will recognize it after allowing a certain amount of drop in the pressure, another will require much more of a fall in pressure before he will consider the pulse to have distinctly returned. With regard to the drug treatment of shock Dr. Lilienthal agrees with those who consider that heart stimulants are of very little avail and his favorite drug in these cases is morphine rather than strychnine. Morphine is used in small stimulant doses, though not in doses sufficiently large to produce any narcotic effect. The sphygmomanometer undoubtedly needs perfecting before it can be brought into general use, since, even in the demonstration this evening, by a slight accident it was prevented from working for some time.

**General Treatment of Shock.**—Dr. H. S. Spooner said that mild shock of gradual development needs to be treated differently from sudden shock with rapid evolution of symptoms. The tendency to progressiveness in the first form mentioned may be checked by heart stimulants as digitalis or by vasomotor relief through nitroglycerin. Severer forms need intravenous injections for while the blood is diverted to the abdominal area and it is often said that the portal system can contain all the blood in the body, the heart must be given something to work on.

Dr. Daniels said that in his experience no drugs were of efficient service in the treatment of genuine shock except morphine in doses just large enough to quiet the nervous system and act as a gentle stimulant. Heart stimulants especially were not likely to come up to expectations in these cases.

**Adrenalin Direct to Heart.**—In closing the discussion, Dr. Brewer said that most of the drugs recommended for shock are utterly ineffectual. It seems unwise to prescribe nitroglycerin since the modern idea of shock is a vasomotor dilatation owing to paralysis of the vasomotor nervous mechanism and the special physiological action of the nitrites is to cause vasomotor dilatation. Adrenalin is the substance on which all eyes are fixed now in the matter of the drug treatment of shock. Some of its effects are already clinically known. Experimentally the outlook seems to be very promising. Dr. Cushing recently saw a dog stop breathing during an experiment. A solution of adrenalin was injected into the veins but without effect. The heart was then exposed and irritated by direct compression but without result. Artificial respiration was kept up and adrenalin was injected directly into the heart cavity. The heart began to beat again and though it was over twenty minutes since the animal stopped breathing recovery was complete.

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## CHICAGO GYNECOLOGICAL SOCIETY.

*Joint Meeting, held March 18, 1903.*

The President, Charles S. Bacon, M.D., of the Gynecological Society, in the Chair.

**Definition of Accouchement Force and the Indications.**—Dr. Charles S. Bacon contributed this paper. Among other things he stated that the term accouchement force is an imported one, and is applied to various methods of removing forcibly from the gravid uterus its contents when the cervix is closed or only partially dilated. It embraces two procedures, dilatation of the cervix, and the extraction of the contents of the uterus. Dilatation of the cervix may be accomplished in different ways. These ways were discussed at length.

He briefly described a few of the principal obstetrical complications which call for the use of one or the other of the methods of forced delivery. Eclampsia is undoubtedly an obstetric complication in which most often accouchement force is used. If the cervix is dilated at the beginning of the eclamptic attack, the uterus should be emptied. But when the cervix is closed, there is still diversity of opinion as to the procedure that should be adopted. Formerly, accouchement force gave such bad results that it was generally condemned in the treatment of eclampsia, but within the last ten years it has come to be generally used. Other serious conditions of the mother which may demand forced delivery are severe anemia, weakness due to other organic dis-cases, as tuberculosis and heart disease. Antepartum hemorrhage is another condition which demands forced rapid delivery. That variety of antepartum hemorrhage due to premature detachment of the normally seated placenta gives perhaps the most urgent indications for accouchement force. Those who have had experience in vaginal surgery would probably prefer in these cases not only the incision of Duhrssen, but the extension of that incision through into the lower uterine segment, making what is now described as the vaginal Cesarean section.

Accouchement force in placenta previa, he said, has been used probably ever since this complication was known, and it is still used, too often improperly, owing to the conditions that are frequently present in placenta previa.

**Bag and Hand Dilatation.**—This subject was discussed by Dr. Robert L. Dickinson, of Brooklyn, by invitation. He said that accouchement force is major surgery. These operations belong in the hospital operating room, as the grave conditions of eclampsia and placenta previa may be foretold. Barnes' bags are anatomic errors. The conical balloon of Champetier dried and broke apart on slight traction, while the undue elongation of the cone showed the presenting part up out of the brim and permitted the cord to prolapse. The simple, strong, short cone of Voorhees, inelastic, thin enough to slip in, when rolled, wherever the finger tip will pass, with no stop-cock to get out of order, is durable, efficient and inexpensive.

For rapid dilation, the tube is pulled upon steadily or with intermissions; but if the normal process is to be simulated or expedited, the douche-bag is raised and lowered, and contractions produced, or lessened, literally, turned on or off, as desired.

The disadvantages of dilation by these methods are the same that apply to all artificial methods of opening the cervix. Although the lips of the cervix are opened and separated thereby, thinning, retraction and effacement do not occur. At least, the normal disappearance of the cervix does not occur, unless the uterus is induced to take an active part. But the advantages of the balloon call for frequent use. The procedure more nearly resembles the normal process than any other method of artificial dilation. It inflicts less injury than any other. The outfit is light, inexpensive, and compact, and its use is within the range of the general practitioner. Its field is not small, for although its action is usually less rapid, like that of branched dilators or the hand, and though the most rigid conditions may not yield to it, yet it *has no rival at all for induction of labor, for inertia in the first stage, and as a tampon dilator in placenta previa with a thick, unyielding os.*

There is nothing so intelligent as the finger, nothing less dreaded, nothing so handy. It will always be the main resource, and this whether it is asked to initiate labor by stripping the membranes or to stretch fully the cervix. Put the rubber cover on it and it is sterile. Give the hand time, and few cases only can resist its action.

The disadvantages of manual dilation are: (1) Infection, overcome by the rubber glove. (2) Laceration, overcome by patient gentleness. (3) The swollen, contused and unthinned result, a drawback common to all artificial methods. (4) The difficulty in reaching or entering the internal os when the cervix stands far back in the pelvis, and is not to be coaxed within touch of the finger tip. This trouble is easily overcome by the single tenaculum gently drawing downward on the anterior lip. And, lastly, there are occasional rings so rigid that no finger can pass them. For them, the knife or metal dilator is demanded. These, in hospital work, we fearlessly cut wider, then deliver, and repair.

In the choice of the method of extraction, the American will often prefer the forceps where the German would bring down the foot. Whenever speed is the main consideration, one is obliged to turn. Whenever, in placenta previa, the head cannot be made to blockade the cervix, one must turn. Version is our chief reliance; but its indiscriminate employment must be limited because of the danger of shock, sepsis, rupture. One may not inadvisedly add shock to shock, in blood loss, or eclampsia. For induction in the latter months, and for inertia during labor, where other causes are eliminated, such as exhaustion, overdistention and malposition of passage or passenger, the bag comes first, then the hand, and the forceps finishes their work. In placenta previa the balloon should be used for the narrow cervix that bleeds, when the head will not plug it; version for the bad cases, since the thigh is the surest tampon. For brisk hemorrhage of detachment of a normally located placenta, the greatest speed is attained by manual or metal dilation. For the rigid cervix of the early months, for the unyielding girdle of the elderly primipara, for the gristly hardness of eclampsia, the powerful Bossi instrument is a great boon, and none of its imitators approach it.

**Abdominal and Vaginal Cesarean Section as a Means of Accomplishing Accouchement Force.**—Dr. J. Clarence Webster presented a paper on this subject. He stated that abdominal and vaginal Cesarean section are rarely necessary as means of rapid delivery. The latter procedure has been employed by very few operators. It is mainly due to Duhrssen's advocacy, in 1896, that it has begun to attract notice. The technic of the operation was described in detail.

Dr. Webster next considered abdominal and vaginal Cesarean section in relation to the various conditions in which accouchement force is most commonly employed. In rare cases of eclampsia, it may be indicated, namely, in contractions of the birth canal by pathological changes in the soft or hard parts which make delivery through it impossible. When also an eclamptic dies, the fetus being alive in utero, it is the duty of a physician, who may be present at the time of death, to advise immediate post-mortem Cesarean section. Bauer has recently reported eight such cases, in which four infants were saved. Vaginal Cesarean section is to be recommended in cases of eclampsia in pregnancy or in early labor in which the cervix is rigid and difficult to dilate.

Within the last few years, abdominal Cesarean section has been performed in several cases of placenta previa. This procedure has been widely criticized. If women were always in hospitals, where the operation could be done promptly by an expert operator immediately after the diagnosis was made, the essayist thinks the results might be more satisfactory, both to mother and infant, than those obtained by all other methods of treating placenta previa, but under the conditions which exist in ordinary private practice, the results would undoubtedly be worse.

Although several obstetricians have suggested abdominal Cesarean section in certain cases of premature detachment of the normally situated placenta, it has been rarely employed. The operation, in the opinion of the essayist, should only be considered when it is impossible to carry out other procedures by the vaginal route. Vaginal Cesarean section is indicated in cases of accidental hemorrhage where the patient's condition is critical, and where the cervix cannot be rapidly dilated by the ordinary methods, providing a competent operator is at hand. In affections of the heart, lungs, kidneys, etc., where the mother is in danger, and rapid delivery indicated, this operation may be undertaken. In these various conditions, vaginal section is indicated where the cervix does not admit of easy dilatation. The abdominal operation should not be employed, save where there is no possibility of satisfactorily performing vaginal section.

**Cervical Incisions in Labor.**—Dr. Rudolph W. Holmes discussed this subject. He said that the use of cervical incisions is by no means a new obstetric procedure, as for a century or more cutting operations upon unyielding cervices have been fully recognized.

He discussed the anatomical considerations, indications, essential indications, atresia of pregnancy, rigidity without closure of os, ventrofixation, contributory indications, premature rupture of membranes, generally contracted pelves, eclampsia, heart disease, contraindications, dangers, the operation and technic.

In closing, he expressed his strong condemnation of the too common practice of using forceps through the partially dilated os. He believes that forceps never were intended for dilators. If an instrumental delivery is indicated and full dilatation is not present, some method of dilating the os must be used first. A great advance in the progress of general obstetric practice will be realized when the profession learns that a partially dilated os is a positive contraindication to the use of forceps. Dr. Holmes concludes: (1) The contributions of Duhrssen to the subject of cervical incisions are not sufficiently original to warrant a proprietary right in the nomenclature. Coutouly, Baudelocque, Bedford, Braun and Skutsch did much to develop our knowledge of the subject. (2) Effacement of the cervix is an indispensable prerequisite to the use of incisions. For this reason incisions are especially applicable to primiparæ, and are often contraindicated in multiparæ. (3) Incisions are indisputably of value, even necessary in essential indications. In contributory indications their use is a mooted question. The judgment of the operator must decide in individual cases. (4) Manual dilatation preliminary to incisions does not secure the best cervical condition for incisions. (5) Incisions always are potentially dangerous; dangers comprise infection, hemorrhage, and extensive lacerations beyond the vaginal vault. (6) Use of incisions demands an obstetrical armamentarium, assistants, and a definite experience in obstetrical procedures. (7) The details of the technic may be modified to suit the taste of the operator. (8) The minimum number of incisions to meet the exigencies of the case should be made. (9) Oblique incisions may be proven to be more advantageous as regards the after-effects than the usual quadrant cuts. (10) In the absence of hemorrhage, or accessory lacerations, it is a mooted question whether the incisions should be sewed up or not. (11) Immediate delivery should follow the incisions.

**Bossi Dilator and Its Place in Accouchement Force.**—This subject was introduced by Dr. Joseph B. De Lee, who said that the inventor of this instrument had used it since 1890, and had shown it at several medical congresses, but few obstetricians had used it until recently. The dilator has been used with success recently in Dresden, Prague, Berlin, Paris, and several other foreign cities. Its use in this country has not been published, although the author finds that it has been employed at Johns Hopkins and at the Sloane Maternity, New York. Dr. De Lee has used the Bossi dilator three times.

Duhrssen has made an exhaustive study of most of the reported cases, and concludes that the Bossi dilator is a dangerous, inefficient, and useless instrument. The literature on the subject is rapidly increasing. The author's own opinion, based on three cases which he reported in detail, and a study of the many reported cases, is as follows: (1) There is a small field of usefulness for the instrument in cases where rapid dilatation of the cervix is necessary after effacement. Before effacement, the colpeurynter should be used. It will be more successful in multiparæ. (2) The instrument will be useful in dilating the cervix in those cases where manual dilatation would be successful. It possesses advantage over the hand in the asepsis, in that it is not so tiring, so that the operator may carry out the subsequent delivery comfortably. (3) The instrument is not safe, but requires careful and skilled watchfulness, and one must search for and be ready to repair more or less extensive lacerations. These are greater in primiparæ. (4) It should never be used in placenta previa. (5) It does not replace the colpeurynter, the use of the hand, or cervix incisions in all cases.

## BOOK REVIEWS.

OBSTETRICS. A Text-book for the Use of Students and Practitioners. By J. WHITRIDGE WILLIAMS, M.D., Professor of Obstetrics, Johns Hopkins University; Gynecologist to the Johns Hopkins Hospital; Gynecologist to the Union Protestant Infirmary, Baltimore, Md. D. Appleton & Co., New York and London.

OF late we have been inundated with text-books on the subject of obstetrics, but to our mind, no single writer has given us such a complete and original volume as is here presented. The anatomy, embryology, histology and pathology, to which the author has devoted more than one hundred and fifty pages, are more concisely and lucidly placed before the student than in any other work in the English language of a like character.

In Chapter X, which has to do with the physiology of labor, there are given many and interesting causes for the production of the beginning of labor that has been hitherto passed as unknown to the usual writer.

The author's classification of abnormally developed pelves is the most minute and yet extensive of any of the modern investigators, and we doubt the advisability of trying to make the close differences and distinction that Dr. Williams insists on. It is certain that the subject is in no way simplified by his classification.

The subject of puerperal sepsis is all that would be expected from one who has done such excellent research along these lines. A most complete list of the bacteria and parasites which play such an important rôle in this condition is given with an ingenious method of taking cultures from the uterus in a truly aseptic manner. "Palpation of the cavity of the uterus," says the author, "enables us in many cases to predict the result of bacteriological examination, and, what is of more practical value, gives important information as to the line of treatment to be pursued. Thus in putrid endometritis and infections due to the colon bacillus, we usually find the surface of the uterine cavity rough and covered with shreds of broken down tissue; while in the septic forms its interior is often perfectly smooth." Such a degree of tactus eruditus as this would presuppose does not become the property of many most intelligent and skilful clinicians. We do not doubt that Dr. Williams may find this method of examination helpful, but it is to be feared that there are not many others who will be able to reap the same amount of information from the employment of the procedure, as an aid in the differential diagnosis of the two varieties of infection of the uterine cavity.

Symphyseotomy is given but little enthusiasm and is to the author but a competitor of version, high forceps and craniotomy, or with Cesarian section, provided the conjugata vera exceeds 6.5 cm. In closing the chapter devoted to this subject the author very succinctly expresses his opinion in the following words: "Personally, at the present time, I do not expect to perform symphyseotomy under any circumstances, and consider that the present enthusiasm for it will eventually disappear."

Too much of praise cannot be bestowed upon the author and publisher for the delightful manner in which the book is illustrated. Every effort seems to have been employed to make the pictures true to life. Accompanying each description of the method of palpating the abdomen of the pregnant woman as a means of diagnosing its position, by Leopold's maneuvers, there is a most excellent semidiagrammatic picture with the points to be made out from each maneuver. In place of the usual and time-honored schematic cut representing the process of extension of the fetal head in its descent through the parturient canal and in the dilatation of the vulva, there is a series of photographs taken from life and showing the true state of the parts at this time in a much clearer manner.

We feel that Dr. Williams is to be congratulated for having given us one of the best text-books that has been published in the English tongue pertaining to the subject of obstetrics. There are but very few its equal and certainly none better, both in the character and originality in method of presentation of its subject-matter.

Surgical Anatomy and Operative Surgery. For Students and Practitioners. By **John J. McGrath**, M.D., Professor of Surgical Anatomy and Operative Surgery at the New York Post-Graduate Medical School, Visiting Surgeon to the Harlem Hospital, and Assistant Visiting Surgeon to the Columbus Hospital, New York. F. A. Davis Company, Philadelphia.

There are so many works upon surgery being placed before the medical profession at the present time, and aiming to cover the subject in one small volume, that there seems little need of more books of this sort, unless they possess some special feature of usefulness. In order to cover so great a subject in so small a space it is, of course, necessary that only the most important facts be recorded and the book becomes a special text-book rather than one of value as reference. In this volume there has been an endeavor to combine the subjects of surgical anatomy and operative surgery in a practical manner with the exclusion of all unimportant anatomical points and a description of only the most frequently employed operations. As it has been intended evidently for use more particularly by the students at the Post-Graduate Medical School under instruction from the author, it will undoubtedly prove to be of considerable service to them in refreshing their memories upon important anatomical and surgical points. It can hardly be said, however, that it will prove of any great benefit to the general practitioner.

"Wild Oats:" A Sermon in Rhyme. By **Maurice C. Hime**, M.A., LL.D., Sometime Head-Master of Foyle College, Derry; Author of "Home Education," "A Schoolmaster's Retrospect," "Unbelief," etc. P. Blakiston's Son & Co., Philadelphia.

Dr. Hime is the author of the pamphlet on the very delicate subject,—Schoolboys' Special Immorality, which has attracted considerable attention and has been highly praised by most of the English medical journals. The present pamphlet, "Wild Oats," is a rather prosy sermon in rhyme. The author takes away some of the sting of Horace's critique by frankly quoting at the beginning "In spite of the rhythm, 'tis prose after all," but we fear that the sermon is least likely to be read by those who might profit most by it.

Anatomy. A Manual for Students and Practitioners. By **William H. Rockwell, Jr.**, M.D., formerly Assistant Demonstrator of Anatomy in the College of Physicians and Surgeons, Columbia University, New York. Series edited by **Bern B. Gallaudet**, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York; Visiting Surgeon, Bellevue Hospital, New York. Lea Brothers & Co., Philadelphia and New York.

Since medical colleges are each year becoming more exacting from students, on account of the rapidly increasing medical knowledge which it is considered essential for them to be familiar with, it is advisable, of course, that these new demands should be met, so far as possible, by higher grades of scholarship and capability on the part of the student. On the other hand, time is such an important element that improvements in the methods of study should be introduced whenever possible.

This manual of anatomy aims to furnish the student or practitioner with all the essential points of the larger text-books and seems to be especially valuable on account of its lack of pretence of originality and its thorough conformity in arrangement and even wording to Gray's Anatomy which is so generally used at the present time. Thus the confusion of ideas which results from the use of one text-book and a manual for review which is founded upon another is entirely avoided. Many of the valuable illustrations have been omitted but it is not intended that the manual should entirely displace the complete text-book. It should serve rather as a ready means of reference and review, and it is certainly well adapted for that purpose.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially prepared Articles on Treatment, Medicine, Surgery, etc. By Leading Members of the Medical Profession Throughout the World. Edited by **A. O. J. Kelly**, A.M., M.D. Volume I, Thirteenth Series. J. B. Lippincott Company, Philadelphia.

The present volume of the International Clinics, the beginning of a new series, is the first to appear under the direction of the new editor, Dr. A. O. J. Kelly, of Philadelphia. It contains even more excellent clinical material than usual. The opening article is from the pen of Prof. Osler, who gives the interesting details of all the cases of aneurism of the descending aorta that have been under his care in his years of service at Johns Hopkins Hospital. Most of the important diagnostic, prognostic and therapeutic features of aneurism of the aorta can be very practically obtained from these pages. It is well known how thorough Prof. Osler is on a subject like this.

Other interesting clinical features are by Dr. Reynold Webb Wilcox, of New York, on the treatment of anemia and of cardiac and vascular fibrosis, the treatment of chronic urethritis by Prof. Finger, of Vienna, and a very practical detailed account of the application of Nauheim methods with American adaptations to the treatment of chronic heart disease by Dr. Satterthwaite, of New York.

American Surgery is well represented by Professors Keen and Senn. If this number is to be taken as a foretaste of the new editorial management, much may be expected from the new series of the Clinics.

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## ORIGINAL ARTICLES.

### POISONING BY CORROSIVES.*

BY ELI H. LONG, M.D.,
OF BUFFALO, N. Y.;
PROFESSOR OF THERAPEUTICS, UNIVERSITY OF BUFFALO.

EXTENSIVE experience with cases of poisoning by corrosives does not fall to the lot of many men. Except in emergency work in large cities the rarity of opportunity to observe cases of this class makes their consideration largely theoretical, and the equipment for prompt treatment by the average physician uncertain. This is less true of poisoning by carbolic acid than by other corrosives, because of the frequent intentional or accidental taking of this drug.

The limitations to experience observed above render it important that as perfect a grouping of the agents as is possible be made, to serve as a basis for consideration both of the nature of their destructive process and of modes of treatment. Fortunately corrosive agents lend themselves readily to such grouping. Indeed our theory may be so related to chemical fact as to serve well the needs of certainty of knowledge. It is imperative that the attendant should be prepared to treat these cases not only promptly, but *immediately;* for all corrosive action that is possible is likely to occur within a few minutes. By corrosive action is meant that immediate disorganization or coagulation of tissue that occurs upon contact with the poison. The chemical relations of most of these poisons to the tissues can be easily fixed in the mind, as a matter of prime importance in their study.

With the preliminary observation that nearly all corrosives are strong chemicals, I desire to emphasize the general proposition that *the fact and the nature of their destructive action depend upon their chemical affinities.* That is to say, they have so great an affinity for one or more constituents of the tissues, that they destroy the organic structure in order to satisfy it. It may be noted that most of them *differ* somewhat in their effects upon tissues. This is explained by their *difference* in *chemical affinity.* To illustrate these points, we find that carbolic acid has a simple affinity for albumin, by which it coagulates the surface, thereby limiting its penetration. Its action is therefore very superficial, nerve endings are not exposed, pain is slight. In contrast, caustic potash has a double affinity—for water and for acids. It does not coagulate albumin, therefore it can penetrate until, by disorganization of the tissues, its affinities are satisfied. Its effects are accordingly very painful.

In support of our general proposition we observe that the severity of action depends upon concentration rather than upon quantity. A teaspoonful of a strong mineral acid will corrode, while the same quantity diluted with a glass of water will only irritate. This accords with facts of chemical affinity seen in the laboratory, where energy of reaction corresponds with concentration of reagents. Having thus stated and supported our proposition, we must except from its application several caustics, particularly iodin and bromin; at least we cannot so easily explain their action on the ground of ordinary chemical affinity. Again, it is not possible to explain in this way the action of non-corrosive escharotics such as arsenic. With this slowly-acting agent, however, the time element is less important if the case is seen early. Related to the fact of the slow action of arsenic is the statement frequently heard that a person may take too much arsenic to kill him. The grain of truth upon which the statement rests is that a large quantity of the poison may be promptly rejected by vomiting before it has had time to act, while a smaller quantity would be tolerated until it damaged the tissues.

Leaving out of present consideration the halogens and arsenic, the following groups of corrosives comprise the majority of agents and they will admit of the application of our proposition: 1. Mineral acids—hydrochloric, nitric, sulphuric. 2. Caustic alkalies—soda, potassa, quicklime, stronger water of ammonia. 3. Coagulants—carbolic acid, copper sulphate, mercuric chloride, silver nitrate, zinc chloride.

A glance at these groups will at once show the practical bearing of our proposition in its application to treatment by antidotes.

The mineral acids present little practical difference of action. They all coagulate albumin in addition to their affinity for bases. Sulphuric acid has a decided affinity for water.

The caustic alkalies, by reason of their common affinities for water and acids, act similarly. Stronger water of ammonia in addition irritates the air passages on account of its volatility. The agents of this group do not coagulate albumin, therefore they penetrate deeply into the tissue.

The coagulant corrosives act differently according to the affinities presented by each. Carbolic acid possesses the simple affinity for albumin, while the metallic compounds, when decomposed, have also the action of the liberated acid in addition to the coagulant action. The fact of the double action of these corrosive salts needs emphasis. Their contact with albuminous matter decomposes them with the substitution of albumin for the acid which is liberated. Thus may be explained the difference in action of two different salts of the same metal, such as acetate of lead and nitrate of lead, the character of the acid liberated determining the degree of irritant effect.

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* Read before the Buffalo Academy of Medicine, Feb. 3, 1903.

*Principles of Treatment.*—Important as is the employment of a chemical antidote, there is something *more important* in view of the power of the concentrated poison and the rapidity of its action. For, in order to apply the chemical antidote, it must be ascertained just what poison has been taken. This will consume time and delay treatment during the period of greatest danger to the tissues. The important thing to do *at once* is to limit the corrosive action of the poison. I submit that the most important thing, which can always be done most readily, is *to dilute the poison largely by a copious draft of water,* and this without reference to the character of the poison. By this means we stop further corrosion by converting the strong acid, alkali or salt into a comparatively harmless dilution of it. The selection and use of the chemical antidote can then follow as a matter secondary in point of time. There is a classic objection to the use of water in poisoning by sulphuric acid, based upon the great increase of temperature which is observed when the two are mixed. It has been found, however, that upon mixing 10 c.c. of sulphuric acid with 100 c.c. of water at 70° F., the temperature rose only to 111°; and in using twice this quantity of water (a glassful), the temperature of the mixture rose to only 94°. The precaution to be observed is to use an abundance of water, and the objection is removed. The stomach tube should be used very cautiously, if at all, because of danger to the already damaged wall of the stomach.

The poison having been diluted, it should then be neutralized as quickly as possible by the chemical antidote. Corresponding closely to the three groups of poisons under consideration, the chief antidotes of practical value comprise the following three groups: (1) Dilute alkalies; (2) dilute acids; (3) albuminous substances.

Of occasional value are alcohol, tannic acid and starch. It is only necessary to ascertain to which group the poison belongs in order to select the antidote. The groups will be considered in their order with comments as to special points. For the acids the proper antidote is a dilute solution of alkali. The carbonates are objected to because of the evolution of $CO_2$ by their reaction with acids, which might endanger the corroded walls of the stomach by distention. The uncombined alkalies largely diluted are preferable. The least irritating of these are lime water and hydrated magnesia, both of which may be employed safely. If solutions of soda or potassa are to be employed they must be very weak in order not to be irritating of themselves. Soap in solution and plaster scraped from the wall are admissible in emergency.

For the group of caustic alkalies the proper antidote would be a dilute acid, preferably vegetable acids such as vinegar or lemon juice, but any acid largely diluted may be employed. In case the poison is stronger water of ammonia, a volatile acid is needed in addition, to neutralize the irritating vapor in the air passages. Strong acetic acid by inhalation will answer this purpose.

The coagulant group will all be neutralized by egg albumin, or, as substitutes for it, by milk or flour paste. In addition a mild alkali is indicated in order to neutralize the liberated acid, except in case of carbolic acid poisoning, which requires special treatment in addition to the use of albumin. The special antidotes for agents of this group in addition to albumin will be here noted: For carbolic acid alcohol has come to be employed, its effect being probably more upon the tissues than upon the poison itself. Soluble sulphates are also employed and continued for some time in order to avert within the system the formation of the products which are irritating to the kidneys. For silver nitrate, sodium chloride is an excellent additional antidote.

A marked peculiarity of carbolic-acid poisoning is the rapidity of systemic effect, seemingly out of proportion to the injury done to the tissues. Death from carbolic acid will very frequently ensue within an hour's time, showing that either severe shock to the nervous system or very rapid systemic poisoning becomes a factor.

After the proper chemical antidotes have been administered emesis should be favored, unless already excessive, by copious drafts of warm water. When the poison or its compounds have been removed, demulcents should be employed freely to soothe the corroded and irritated tissues; and they should be allowed to remain within the stomach in sufficient bulk to prevent further damage to its walls by friction. Either of the ordinary classes of demulcents may be employed, which include the *oils, mucilages,* and *albuminous* substances. These measures will constitute the immediate treatment of poisoning by corrosives and the attendant damage to the tissues. In addition it may be necessary to employ morphine hypodermically in order to relieve pain and lessen peristalsis, and to employ stimulants judiciously. Perfect rest in bed for a number of days is employed, with attention to details as each case may require.

Although arsenic does not belong to the class of corrosives, its destructive action permits reference here to its antidotal treatment. Its chemical antidote is easily prepared, and the process should be indelibly fixed in every practitioner's mind, as it must be fresh when needed. The usual antidote is the *hydrated oxide of iron,* obtained by mixing any solution of a ferric salt with water of ammonia, both having been previously diluted. Either tincture of the chloride or Monsel's solution may be employed for the purpose, and the water of ammonia may be substituted by hydrated magnesia, in which case the product is the equally valuable *hydrated oxide of iron with magnesia.* The antidote, suspended in water, may be given freely.

A summary of the points which are sought to be emphasized in this paper includes

1. The chemical basis of the action of corrosive agents.
2. The selection of antidotes upon the same basis.
3. The importance of immediately diluting the poison with a large quantity of water, irrespective of the nature of the corrosive.

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## APPENDICOSTOMY (WEIR) FOR THE TREATMENT OF CHRONIC ULCEROUS COLITIS.

BY WILLY MEYER, M.D.,
OF NEW YORK;
PROFESSOR OF SURGERY AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; ATTENDING SURGEON TO THE GERMAN AND NEW YORK SKIN AND CANCER HOSPITALS; CONSULTING SURGEON TO THE NEW YORK INFIRMARY.

In view of the comparatively recent introduction of the operation mentioned in the title, the report of the following case may be of interest:

The patient was a woman, fifty-three years of age, who for two years prior to coming under my observation had suffered from frequent diarrhea, sometimes accompanied by pain. During the past three months her symptoms had become aggravated. There were frequent bloody and extremely painful evacuations of exceedingly foul odor. During her recent illness she had lost 60 pounds in weight.

When the patient entered the German Hospital Oct. 20, 1902, inspection through the rectoscope showed that the lower bowel was covered with numerous ulcerations and above these about ten inches from the anus a cock's comb-like granulating mass could be seen. There was no stricture. The ulcerations were apparently of specific origin. The entire large intestine was tender on palpation and it was to be concluded from the patient's history and great loss of weight and strength, that similar ulcerations probably extended throughout the entire course of the transverse and ascending colon. Instead of flushing the bowel from below, it was thought best to make an opening above and introduce the irrigating fluid through the cecum. Had the patient not been in such a weakened condition, cecostomy according to Kader's method, as proposed by Dr. Gibson, would have been resorted to, so that the large-sized tube could have been introduced and the flushing done more thoroughly. For the same reason I should have probably added left inguinal colostomy, thus dividing the large intestine, sigmoid and rectum into two parts for separate treatment. But after due consideration, Dr. Weir's method of irrigating the bowel through the appendix, was decided upon.

On Oct. 8, 1902, the abdomen was opened by means of the intermuscular incision and the comparatively small, not adherent appendix found. It was drawn through the wound in an oblique direction until its tip protruded about one-half inch. The free border of the meso-appendix, at about the same distance from the tip, was stitched to the subcutaneous fat near the lower angle of the wound. The wound was then closed by layer sutures and two small strips of gauze introduced on either side of the appendix down to the fascia of the external oblique. This was done with the view of preventing infection of the wound, as it was thought best to immediately open the appendix in order to see whether its lumen was unobstructed. A flexible bougie, corresponding to about No. 12 French, could be passed into the cecum, also a soft rubber tube of same size. Had the introduction of these instruments been unsuccessful, the wound, of course, would have been reopened, the appendix removed and cecostomy done, as mentioned before. Since, however, as stated, the passage was found unobstructed, the cut end of the appendix was temporarily tied with a catgut ligature and dressing applied. Twenty-four hours later the ligature was removed and the soft-rubber tube introduced; it was kept in situ by means of a small safety pin, held down by two strips of zinc plaster. From now on, the large intestine was regularly flushed through the tube in the appendix with solutions of silver nitrate of increasing strength, beginning with 1:10,000 followed by saline solution. This was done every day at first; later, every other day. After a while the ulcerations in the rectum were repeatedly treated; also the ulcerating hemorrhoids were attended to. Of late medicinal enemata in the knee-elbow posture have been added.

Under the treatment described the health of the patient has materially improved, and although there are still some ulcerations in the rectum, she has gained over 15 pounds.*

To-day the cut end of the appendix is flush with the skin; thus a granulating surface requiring dressing is avoided. There is no leakage whatever on removal of the tube. The small appendicular fistula acts exactly like the artificial openings made in any part of the gastro-intestinal tract by Kader's or Witzel's method, inasmuch as it contracts rapidly when the tube is removed, as was shown by an experience I met with in the course of the treatment: In the middle of February, at the time when the flushing was done every other day, the tube accidentally slipped out under the dressing, which was not noticed until the next treatment. During this time the lumen of the appendix became contracted to such an extent as to require long and tedious work to reforce an entrance, showing that all that is needed in this patient to obtain closure of the opening is to leave out the tube. In the event of a more obstinate case cauterization with Paquelin's cautery will surely accomplish the desired result, as already pointed out by Weir.

The fear expressed by some, that such a misplaced appendix might be particularly prone to set up an inflammation, I do not share. The little organ is hung up, as it were, with draining downward into the cecum; and should it really become inflamed, this would be of no great consequence, since it passes through the abdominal wall in its entire length, where it can do no harm, the peritoneal cavity having long been shut off by adhesions.

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* The patient was presented before the New York Surgical Society, January 28, 1903.

I think this way through the appendix into the cecum might perhaps also be used to advantage in some of the cases of cancerous stricture in the course of the large intestine, sigmoid or rectum, so frequently met with in our practice in old and weak people. These patients when seen by the surgeon often had incomplete or complete obstructive symptoms for quite a number of days. Any major operation, even of short duration, would materially weaken their heart, the latter often being the seat of chronic myocarditis. Surgical interference here is best divided into two parts, the first aiming to relieve the distended bowels above the obstruction, the second to deal with the obstructing tumor (unilateral exclusion of the affected portion by means of lateral anastomosis, with compressing silk ligature around afferent portion of gut just below the anastomosis, permanent artificial anus, or exceptionally excision). To meet the first indication, viz., that of relieving the distended intestinal tract, the appendix, by means of the intermuscular operation—best done under local anesthesia—might quickly be pulled forward and, appearing sufficiently large and unobstructed and not obliterated from without, be stitched into the wound and made use of as above indicated.

The advantages of such a procedure would be manifold: (1) Saving of time; (2) reducing the possibility of infection, since the distended bowel would be opened only after the closure of the peritoneal cavity; (3) obviating the necessity of an additional surgical intervention to close the opening leading into the intestinal tract, the same as is derived from inversion.

I am, of course, well aware that we shall probably rarely meet older patients with an appendix of a caliber sufficiently large to carry out this plan. It also had to be seen whether a tube of so small a size as made to pass through the lumen of the appendix, would answer the purpose. Still, I have made up my mind to approach my next case of obstructive ileus in an old and weakened patient in the manner just outlined. Here Dr. Weir's operation would rather mean to obtain exit from, than to gain access to, the large intestine. Of course, in such cases the tube would have to be introduced at once, and the relief of the distended intestinal tract be a more gradual one. This, however, would not be of great weight, as long as relief were actually brought. Should the tube become temporarily obstructed by fecal matter, short irrigation would probably suffice to make the way clear again. Further clinical experience must show whether this plan is possible.

I certainly consider Dr. Weir's proposition a valuable addition to our operative resources, besides presenting the fascinating idea of making use of this otherwise absolutely useless organ.

The proper designation for this operation, in accordance with our rules of nomenclature, I think, would be: appendicostomy.

## NOTE UPON A CASE OF MYCOSIS VAGINÆ.*

BY

ALLEN J. SMITH, M.D.,
OF GALVESTON, TEXAS,

AND

O. H. RADKEY, M.D.,
OF EDNA, TEXAS.

IN the latter part of November, 1902, Dr. O. H. Radkey, of Edna, Jackson County, Texas, encountered in his practice a case of severe acute vaginitis in a young married woman, pregnant in the second month and miscarrying her fetus some days later. On the vaginal wall he found a large number of small, slightly elevated masses of a brownish color which showed on microscopic examination the presence of great numbers of mycelial threads and conidia of some form of hyphomyces, supposed by Dr. Radkey to be the common thrush fungus, *Oidium albicans*. This material, picked from the vaginal wall with the aid of forceps and preserved in formaldehyde solution, was forwarded to the writer for identification, with an inquiry as to the possibility of the fungus being present in causal relation to the vaginal inflammation.

The history of the case, as outlined in Dr. Radkey's letters, is as follows: The patient was a young married woman, twenty-six years of age, slender, with general health good, and without any type of specific disease. She had a miscarriage in her first pregnancy in January, 1902. Menstruation was re-established the following month, but was unusually profuse. A curettement was performed and thereafter menstruation was normal in time and type until November. In the intermenstrual periods, however, she complained of marked leucorrhea of ordinary character. For this last douches of boric acid and lysol solutions were employed from time to time with distinct temporary benefit. In November menstruation again failed, which, accompanied by certain subjective feelings, was looked upon as evidence of a second impregnation. In the latter part of this month the leucorrhea above mentioned suddenly became unusually profuse and was attended with intense vulvar burning and pruritus. Direct examination of the parts now showed the presence of a follicular vulvitis, but the vaginal wall was found free from inflammatory evidence and vagina slightly patulous. Under appropriate treatment this attack was promptly checked. Some days later, however, after a long walk, the same symptoms, along with considerable pain, burning and itching within the vagina, reappeared, and the vaginal discharge took on an altered type, becoming thick, viscid and somewhat grumous, and of a dirty brownish hue, the color apparently being due to blood admixture. This condition continued for about one week, when, on November 29, she noticed scattered through the discharge a great number of small, dark, granular and mucoid particles, which led to another direct vaginal examination the same day. A mass of blood-stained material, about an inch in length and of the thickness of a lead-pencil, was found hanging from the vulva. The vulva presented the appearance of a follicular vulvitis as before, and the walls of the vagina were covered with great numbers of grayish-brown, slightly elevated masses, easily detachable, between which the mucous membrane was seen apparently normal but beneath which, on their removal, the membrane was angry, raw and somewhat swollen. The cervix uteri appeared small and normal, with a plug of clear mucus in the mouth; by rectal examination the organ was found retroverted and retroflexed. In the knee-chest position the latter conditions were readily corrected. The patches seen on the vaginal wall were picked off with a forceps as far as possible and at once placed in formaldehyde solution for preservation; and a hot boric acid douche was immediately given. The following morning a hot bichloride of mercury douche was given, soon after which the discharge from the vagina took on a distinctly menstrual appearance, the patient suffering but little discomfort except for a few light pains which were accompanied by the appearance of a number of small clots of blood. Thus the condition continued for two more days, the discomfort from the vaginal pain and pruritis being unnoted, when on the third day several more pronounced pains were experienced, and expulsion of a fetus and its decidua, apparently in its fifth or sixth week, took place. For several more days there was more or less hemorrhage, but this soon disappeared; and in less than two weeks the patient was entirely well, all pain, pruritis and leucorrhea having completely disappeared and vaginal examination failed to discover any of the former appearance of the vaginal wall, microscopic examination of the mucus on its surface failing to show any of the fungi previously observed. A letter from Dr. Radkey, dated on January 18, 1903, states that there has been no recurrence of any of the above symptoms to that date. Examination of urine was made repeatedly prior to the discovery of the fungi, but no abnormality of any sort was ever detected, save a temporary high acid reaction.

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* From Pathological Laboratory of University of Texas, 1903. No. 2.

Examination of the material forwarded the writer by Dr. Radkey revealed the presence of the fungi as previously determined by him. The specimen appeared as a coarsely granular sediment in the formaldehyde preserving fluid, each little particle of a dirty grayish to brownish hue, and of soft, semigelatinous consistence. Almost without exception these masses when lightly teased in a weak solution of caustic potash exhibited a rich network of mycelial threads and conidia, intricately grown among the epithelial cells of the vagina, not confined to the surface but penetrating throughout the entire mass of cells. This fact and the slight admixture of red blood cells probably account for the somewhat dark color of the masses in contrast with the white color of ordinary thrush patches, with which the writer would class the growths. Similar appearances were obtained by staining the material with carbolthionine solution; and while numerous bacteria were to be seen in association with the fungi in preparations made with this stain and with Loeffler's blue solution, there were none comparable with gonococci. In addition to the elements named there were recognizable numerous pus corpuscles and shreds of mucus. The mycelial threads appeared well-defined, double contoured; of variable thickness, with transverse septa marking the terminations of the individual hyphæ, slight indentations often appearing at the levels of separation. No internal spore formation could be observed. The conidia were apparent in great numbers along the course of the threads, arising at the junction of adjacent hyphæ and at the termination of the filaments, there being no fruit bodies. The threads freely branched, the branches arising at the position of the septa between the hyphæ and the conidia were commonly arranged in short chains, sometimes also branching, evidently arising by a process of budding, since numerous buds could be found quite comparable to those observable upon yeast cells. In this way there could be sometimes seen masses of conidia somewhat resembling the sporangia of other types of fungi but readily distinguishable from such. The appearances of the fungi and their spores are shown in the accompanying diagram made by camera lucida from a preparation of the specimen submitted.

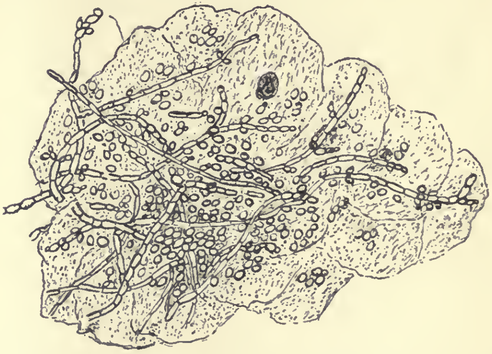


Fig. 1. A group of vaginal epithelial cells overlaid by mycelial threads and conidia of *Oidium albicans*.

It was impossible that cultures of the aphthæ be made, since the specimen had been in formaldehyde solution for several days when received, and no more material was available because of the rapid and complete disappearance of the fungi, as indicated in the above history of the case; and the identification of the growths rests, therefore, solely on the microscopical structural appearances above mentioned. There can be little doubt, however, of the correctness of Dr. Radkey's opinion that it is the *Oidium albicans;* surely it is an *oidium*, and almost as surely the writer is willing to accept the specific identification.

A mycotic form of vaginitis ascribed to the thrush fungus is by no means a novelty, but is, judging from the number of recorded instances in the literature available to the writer at present, not of common occurrence. In American gynecological writings especially it is disregarded, and in recent years has apparently attracted less attention abroad than formerly, in the early portion of the second half of the past century. Pozzi (Treatise on Gynecology, 2d Amer. ed., 1897, p. 726) ascribes the origin of the term *vaginitis* (*colpitis*) *mycotica* to von Herff. The article of the latter (O. von Herff: Ueber Scheidenmykosen, Samml. klin. Vorträge, n. F., Leipzig, 1895, No. 137; Gynäkol., No. 52—493) had been long preceded, however, by a number of clear descriptions of the clinical and mycological features of the condition, as by those of Klamann (Ein Fall von Mycosis Vaginæ mit heftigen Pruritus vulvæ: Allg. med. Centralzeitung., Berlin, 1882, li, 453), Neumann (Ein Fall von aphthöser Erkrankung der Vaginæ mit consecutivem Erythema multiforme; Wien. klin. Woch., 1892, v. 133), Meltenheimer (Ueber Mycosis vaginæ; Memorabilien, Heilbr., 1880; xxv, 6: Mycosis vaginæ im Zustand der Virginität, *ibid.*, 1882, n. F., ii, 199; Ein weiterer Fall von Mycosis der weiblicher Geschlechtstheile; *ibid.*, 1882, n. F., ii, 1), Hausmann (Zur Behandlung der Mycosis vaginalis; Centralbl. f. Gynäkol., Leipzig, 1879, iii, 212; Parasites des Organes Sexuels Femelles, par Dr. D. Hausmann, trad. par Dr. P. E. Walther, Paris, 1875), L. Mayer (Monatsschr. f. Geburtskunde u. Frauenkrankheiten, 1862, xx, 2), E. Martin (Virchow's Archiv, 1856, Bd. ii, 160), Küchenmeister (Monatsschr. f. Geburtskunde, u.s.w., 1859, xiii, 10) and others; and the recognition of the occurrence of the thrush fungus or more or less similar higher protophytes as parasites of the female sexual mucous membranes extends to a much earlier period, as may be recognized in the publications on the subject by Kölliker and Scanzoni (Scanzoni's Beiträge z. Geburtskunde, Würzburg, 1854, ii, 128), Robin (Hist. Nat. des vegetaux parasites, Paris, 1853, 366), Salisbury Amer. Jour. Med. Sci., 1868, lv, 371), Vogel (Henle and Pfeuffer's Zeitsch. f. rationelle Med., 1867, iii, 317), Gubler (Memoires de l'Academie de médicine, 1858, 413), Hennig (Die Katarrhe der inneren weiblichen Sexual Organe, Leipzig, 1862, Erste Auflage, 65, 77, 120, 122), Guersant (Dictionaire de Medicine, Paris, 1821, t. ii, 510), Fleisch (Handbuch der Krankheiten der Kinder, Leipzig, 1803, Bd. i, 44), and J. P. Frank (De curandis hominum morbis, Mannheim, 1792, lib. iii, 273).

The condition may be found well outlined in the above and probably in others of the older writings unknown at present to the writer, being described as especially liable to occur in the course of pregnancy, particularly in women having patulous vaginæ, as being of comparatively sudden occurrence, accompanied by considerable pain, intense burning and pruritus and attended with an intensely acid vaginal discharge, in which more or less blood discoloration is apt to be present. The appearance of the vaginal wall is described much as is above detailed in the present paper, the aphthous patches being sometimes of the ordinary appearances of those in thrush of the mouth but sometimes as grayish or somewhat darker, slightly elevated points of a mucous or gelatinous appearance, leaving a raw base on removal, with the intervening mucous membrane sometimes normal and at other times red, angry and swollen. Hausmann's monograph (*loc. cit.*) on the parasites of the female sexual organs is, among these writings, especially important from an etiological standpoint, in that he details a considerable number of experimental inoculations of the vaginal lining with *Leptothrix vaginalis, Oidium albicans, Penicillium glaucum, Aspergillus glaucus*, several varieties of mucors, and other fungi, from which he is led to conclude a special pathogenic power on the part of the oidium and to a less extent the leptothrix in this direction. The influence of the presence of children affected with aphthous stomatitis about pregnant women or upon lactating women is mentioned; Vogel (*loc. cit.*) and Gubler (*loc. cit.*) as well as others refer to the favoring tendency of a highly acid reaction of the vaginal secretion toward the development of such growths. Joseph Frank (Praxeos medicæ universæ precepta, Leipzig, 1830, th. iii, 169 -1 Obser., p. 662), Eisenmann (Von der Krankheiten des Menschens, Berlin, 1836) and Neumann (Versuch. einer Naturgeschichte der Fingerweidewürmer thierischer Körper, Brandenburg, 1872, 462) speak of the extension of anal fungi to the vagina. Robin (*loc. cit.*) describes and pictures certain algæ mentioned by Lebert (*incon.*) as found in the uterine cervix, supposed to have been brought thither by vaginal douches. Martin (*loc. cit.*) describes a case occurring in a young pregnant woman, after indulgence in finger coitus with her lover, a miller, suggesting that the possible presence of meal on the fingers of the latter may have been the nidus in which the fungi were lodged; the same idea suggests the possibility of auto-infection by masturbation in women who have about them children affected by muguet, as Hausmann (*loc. cit.*) suspects in connection with an aphthous inflammation of the labia majora among 24 girls in a school, aphthous stomatitis also existing in some of the members of the class at the time (Trousseau, Goschen's deutsche Klinik, 1854, 79). As a possible element of causation one should also keep in mind the well-known favor which the retention of even small amounts of diabetic sugar from the urine about the parts originally pointed out by Friedreich (Virchow's Archiv, 1864, ii, 476), may afford the growth of these parasitic protophytes, and the possibility of a slight physiological glycosuria during the period of pregnancy.

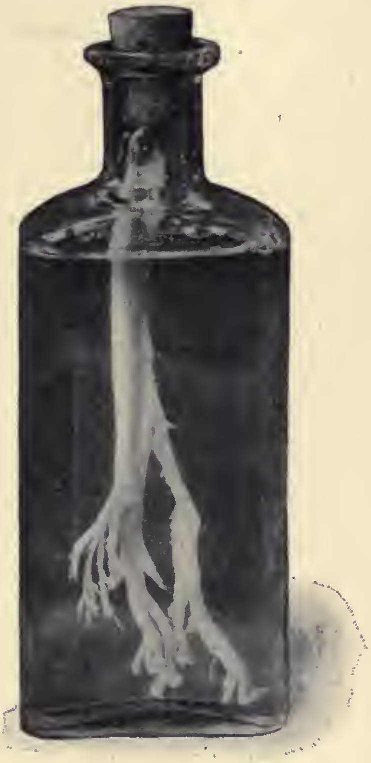
It would thus seem that the delineation of this form of vaginitis or vulvovaginitis as a disease entity is clear; Hausmann and others have long since shown the importance in its causation of the *Oidium albicans;* its prompt and vigorous treatment by such remedies as bichloride of mercury douches, as in other forms of infectious vaginal inflammations (as in the above case and in the gynecological texts which consider the matter at all), is quickly followed by the disappearance of the symptoms, the aphthous patches from the vagina, and the hyphæ and spores from the tissues and discharge. With such consideration in mind and in view of the very rare mention of the subject by American writers upon gynecological subjects (of a number of old and recent American gynecological text-books the writer has found definite recognition of the affection only in Reed, New York, 1901), the writer has felt that the report of the above case should not be neglected. A question of interest into which this note does not extend beyond the suggestion, exists as to whether the miscarriage occurring with the termination of the symptoms of the aphthous vaginitis was due to a possible extension of the vaginal inflammation to the endometrium or to vascular or muscular reaction to the remedial hot douches employed for the destruction of the fungi in the vaginal walls.

## CAST FROM A CASE OF MEMBRANOUS CROUP.

BY EVERETT J. BROWN, M.D.,

OF DECATUR, ILL.

THE cut represents a cast of the trachea and bronchi from a case of diphtheritic croup in a boy, aged six years. The cast was expelled after an unsuccessful attempt at intubation. The child had not been seen by a physician until the fourth day, hence the antitoxin used was valueless. I was called to intubate at once, but the extent of the false membrane and the pushing down of the same, made the attempt a failure, but loosened the cast sufficiently to cause its expulsion with a violent coughing effort and with great relief to the patient; the dyspnea did not return but the child died several hours later of the toxemia.



## REPORT OF A CASE OF RUPTURE OF THE UTERUS; LAPAROTOMY; RECOVERY.

BY NUTTING FRASER, M.B., M.D.,

OF ST. JOHNS, NEWFOUNDLAND.

FEBRUARY 21, 1902, I was called to see Mrs. W., aged forty-five years, living 12 miles in the country, and went prepared for an ordinary labor case. I reached her house at 10.30 A.M. and was told that her labor had commenced at 3 A.M. with regular, strong pains, such as she had been accustomed to have in her former labors, and that the pains had continued thus until 6 A.M., when they suddenly ceased, and now, for four hours and a half, there had been no pains. Becoming alarmed, they had sent for medical assistance. The patient was a multipara, had borne eight children—the youngest being very little over a year old. All her labors had been tedious and twice she had adherent placenta. She suffered from an old umbilical hernia and was very tender at this spot. The so-called midwife was a very ignorant old woman whose reputation in the district was immense, owing to the fact that she had been a charwoman at the General Hospital. The patient stated that the midwife had "helped her" with each pain by passing her fingers, or hand, into the vagina, and that with the last pain she had passed her hand up farther than usual, causing intense agony, and after that labor had ceased altogether. The abdominal tenderness had increased and a feeling of weakness like death had come over her, accompanied by vomiting.

On my arrival at 10.30 A.M. I found her complaining of weakness, no labor pain, vomiting a dark green fluid, pulse rapid but of fair volume, great tenderness on palpation all over the abdomen. Per vaginam, the os uteri was fully dilated, the cervix soft and flabby, the posterior lip swollen, edematous and low in the vagina. Above the os on the posterior surface, my fingers entered an opening which I did not at the time understand. The head was above the brim in R. O. P. position, freely movable. At the patient's request I gave chloroform, and then, introducing my hand to attempt rotation of the fetus into the anterior position, it entered the opening before mentioned, and came in contact with a coil of intestine. It was at once apparent that I had a case of ruptured uterus to deal with. Rotation was impossible as the uterus rotated with the fetus. Forceps were useless as the head receded so far above the brim that forceps could not reach it, the only alternative therefore was version, and I was doubtful how far even version would be practicable, owing to the position of the fetus. The back of the fetus being posterior, the downward traction would be anterior, and the head of the child passing over the posterior wall of the uterus might result in still greater damage to the torn wall. But in practice no such difficulty was met with. Seizing the right (posterior) leg of the fetus, a little care sufficed to draw it down and so turn the child without causing further damage. The baby was born dead, the cause of death being the separation of the placenta as the latter was free in the uterine cavity. In taking out the placenta my hand again accidentally entered the peritoneal cavity, and a coil of intestine prolapsed and had to be returned. After the birth, the patient rallied quickly from the chloroform, but immediately the vomiting commenced again. There was not much bleeding, however, and the pulse, though quick, 124, was remarkably good for a person in her condition.

My position now was as follows: Twelve miles from town with a bad sleigh-road intervening, no telephone or telegraph, no instruments or dressings, and no skilled help, and a patient whose condition was desperate and to whom every hour would be most precious. Taking everything into consideration I decided that her best chance would be by removal to the hospital, even with a bad road to pass over. This, however, could not be carried out as the ambulance could not be taken over the road, so I returned at 11.30 P.M.—twelve hours after delivery—prepared to operate and accompanied by Dr. Brehm to give the anesthetic. We found her still vomiting, the fluid now being black; weak and suffering considerable pain; the pulse 130; but there had been no hemorrhage to any extent. As the greatest danger would be from sepsis I considered tamponing useless, and decided to open the abdomen. In the first place the midwife's dirty hand had probably been in the abdominal cavity, and, secondly, my own hand could not have been aseptic, having to administer chloroform and touch various things after being washed. But the surroundings did not favor an abdominal operation, and the want of a trained nurse or skilled help almost vetoed it altogether. The house was a low farm-house, consisting of a kitchen and a few rooms opening off the kitchen. No preparation of the room was possible, save to pile up a big wood fire in the stove and so get as much heat as possible, made necessary by the fact that it was a cold February night and the ventilation beneath the doors and windows was particularly free. I used rubber gloves, after having sterilized my hands. Thus protected, I was able to wash the patient and get everything ready for my own operation, and peeling off the gloves again, my hands required very little additional washing before commencing to operate. On opening the abdomen, some clots and liquor amnii escaped, and then, drawing forward the uterus, I found the tear well down on the posterior surface, in the lower uterine segment. It was a large transverse tear, running completely across the posterior surface and extending around to the left side. Working single-handed, I saw immediately how difficult it would be to stitch such a tear and therefore decided to complete the hysterectomy. This was rapidly done and then the abdominal cavity freely washed out with hot saline solution. No suture was used for the pelvic peritoneum, but taking a large piece of sterile gauze I packed the pelvis lightly with it, thus walling off the intestines and peritoneal cavity, brought it down through the open stump into the vagina and then packed the vagina with iodoform gauze. Before closing the abdominal wound the hernial sac, including umbilicus, was taken away, the layers of abdominal wall freed and brought together. The wound itself was closed by all-through silkworm-gut sutures.

The patient stood the operation well but was hardly roused from the anesthetic when vomiting again began. Before leaving her she was given a hypodermic of strychnine gr. $^1/_{40}$, a high edema of normal saline solution and sulphate of magnesia left to be taken in dram doses every hour until an evacuation of the bowels should occur. The vomiting continued all next day, each dose of the magnesia being immediately returned. At 6 P.M., Feb. 22, she began to take half grain of calomel every half hour and the vomiting ceased. At 10 P.M. I passed the long rectal tube and gave a high enema of water, glycerin and turpentine. I drew down the vaginal dressing a little and put in a fresh packing. A very free serous discharge had occurred but the pain had ceased with the vomiting and the patient expressed herself as feeling very well. Nevertheless, I still had some misgivings about her as the temperature was only 97.6° F. and the pulse 130 but still of fair volume; tongue dry; very thirsty; abdomen distended somewhat and tympanitic. Feb. 23, bowels moved at 3.30 A.M. and twice during the day; temperature has risen to 99° F., and the pulse came down to 124. Tympanitis and tenderness of abdomen quite gone.

The further progress contained nothing of note, being one of rapid and uninterrupted recovery. The gauze was removed by Feb. 26, that is, five days after operation, the early removal being necessitated by the distance and inaccessibility of patient's dwelling.

Rupture of the uterus is one of the gravest complications of labor, nor is it very rare, the frequency being somewhere between 1 in 1,200 confinements (Bandl) and 1 in from 2,000 to 5,000 (Garrigues[1]). The literature has of late contained the reports of many cases, and remembering the numbers that would not be reported or even recognized, probably Bandl is not far astray in his estimation of the frequency of the accident. The causes are generally classified as spontaneous or traumatic.

Since Bandl wrote his classic treatise on the lower uterine segment, in 1875, it is generally accepted that an obstructed labor, accompanied by severe uterine contractions, is liable to end in spontaneous rupture, such rupture occurring in the lower uterine segment, and warning being given by the appearance of the so-called "contraction ring" or ring of Bandl before the rupture actually occurs. But other important predisposing causes are now well recognized in spontaneous rupture. Thus anything which may have a weakening effect on the uterine muscle will predispose to a rupture when the muscle is severely taxed, a previous metritis, endometritis or fatty degeneration, a placentitis or traumatism from adherent placenta to which may be added the loss of tone in the uterine muscle from frequent child-bearing at short intervals. Alexandroff[2] believes that there is "an encroachment of placental tissue on the wall of the uterus, that the chorionic villi burrow deeply between the bundles of muscular fibers and connective tissue. Changes occur in the uterine wall." Smyly[3] of Dublin says that the accident "may be due to an abnormal weakness of the lower uterine segment attributed to chronic metritis or fatty degeneration, but although this is probably true it has not yet been directly confirmed by post-mortem examination." But Hypes[4] of St. Louis reported a case due to this very cause in 1894, where microscopic examination revealed fatty degeneration at the point of rupture. In this case the lower zone of the uterus exhibited no thinning or formation of Bandl's contraction ring. The same authority quotes from Jolly: "Contractions of uterus would not cause rupture without disease of tissues." The other predisposing causes to spontaneous rupture such as cancer, etc., need not now be enumerated.

Of the traumatic causes by far the most common is, some hours after the escape of the liquor amnii, an attempt to turn. Ross[5], of Toronto, attributes 50 per cent. of all operative cases to this cause, so that force in these cases should be very judiciously applied. Dohrn[6], of Königsberg, was called to a case in which a midwife had diagnosed transverse presentation and sent for a physician. The latter endeavored to turn (without anesthesia) but failed to reach the feet. He then attempted to push the presenting shoulder up and bring the head down into the pelvis, in which manipulation he was assisted by the midwife, who made downward pressure on the head. Suddenly the doctor's hand entered a big cavity and Dohrn found a ruptured uterus with the fetal head in the abdominal cavity. But it is not alone in the hands of inexperienced operators that rupture occurs. Carstens has had a case in Detroit caused by ordinary podalic version seven or eight hours after labor commenced, skilfully performed. Direct traumatism from a fall of 12 feet has been noted by Reissing[7], and severe continued traction on the arm of a transverse case by a midwife is reported by Rein[8]. In Pollak Simpson's[9] case he attributes the actual rupture to the fetus. The case was one of arm presentation where the unfortunate mother tried to conceal her condition and when the arm of the child came down she cut it off. As the baby's feet were against the uterine wall the reflex movements set up by the amputation were sufficient to rupture the uterus and the feet protruded through the wall itself.

The case I have just reported adds another to the variety of causes enumerated and is, in its way, unique. My case was one of actual tear by the fingers of the woman who acted as midwife. This could only be believed and realized by one who has practised among these people and consequently is acquainted with their habits. The poorer class, who can pay but little, are glad to have any neighbor help them through when in labor, and so the neighbor becomes a midwife. With no training and nothing but ignorance to plead, they frequently pull on the perineum during the pains, hoping to hasten the delivery. In this way I have seen a complete laceration of the perineum before delivery, caused by the hands of the female attendant. Mrs. W. was a multipara, with an old, torn perineum, very lax vagina, and the midwife's whole hand slipped in as easily as one's fingers would in a normal case. She then evidently hooked her fingers into the posterior lip of the cervix and by pulling gradually, tore the cervix from the body of uterus. After the rupture occurred labor ceased, as it does in these cases, and medical assistance was found necessary. The predisposing causes no doubt operated to some extent, also a large family with 12 to 15 months between the children, previous adherent placenta and injury to uterine walls as well as a general tendency to fatty degeneration as evidenced in the large amount of adipose tissue over her abdomen and other parts.

As regards the symptoms of rupture apart from the actual finding of the tear itself, the sudden cessation of previously regular and strong pains accompanied by a pain of a different nature (perhaps tearing) and some degree of collapse would arouse one's alarm in any case of labor. The pulse almost immediately increases in rapidity and with Ross[10], I believe that some cases of partial rupture occur and remain undiscovered, the case being put down as one of peritonitis following immediately upon the labor being unexplained.

I do not propose now to take up the treatment in detail. Cases have been reported of recovery after tamponing alone, to show that operation is unnecessary. Others again have reported fatal cases treated the same way and claim abdominal section in all cases. In addition to tamponing and abdominal section with suture of the wound, abdominal hysterectomy, vaginal hysterectomy, drainage by rubber tubing, and suturing the laceration (when low) through the vagina have each been advocated. But each case presents its own characteristics and must be treated on its merits. In my case I opened the abdomen (1) because I considered the patient could still stand the operation; (2) to clear away anything foreign that had entered and wash away as much infection as possible, and (3) to examine the laceration and close it to prevent intestines prolapsing again and establish drainage of the already infected peritoneal cavity. The tear, however, was so low down as to be impossible to suture, the more so, that I was single-handed. The uterus itself would probably have been infected and would be a source of danger; therefore, considering all things, I decided that the safest and quickest way would be to complete the hysterectomy. To provide perfect drainage I left the stump open and believe that this fact alone had a good deal to do with the favorable termination of the case. Next important to the drainage in these septic cases I would put the early exhibition of purges, the free use of strychnine and the normal saline solution.

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# NEURITIS FOLLOWING LUDWIG'S ANGINA: REPORT OF CASE.

BY CHARLES J. ALDRICH, M.D.,

OF CLEVELAND, OHIO;

LECTURER ON CLINICAL NEUROLOGY AND ANATOMY OF THE NERVOUS SYSTEM, COLLEGE OF PHYSICIANS AND SURGEONS, CLEVELAND; NEUROLOGIST TO THE CLEVELAND GENERAL HOSPITAL AND DISPENSARY; NEUROLOGIST TO THE CLEVELAND CITY HOSPITAL.

ANGINA LUDOVICI or cellulitis of the neck is an affection not rarely met with in medical practice and is usually seen as a secondary infection, particularly in diphtheria and scarlet fever. It may occur from trauma and occasionally as an idiopathic affection. Although in idiopathic cases the diphtheria bacillus has been demonstrated it is usually a streptococcic infection of the cellular tissues and the glands of the floor of the mouth, particularly the submaxillary and appearing ordinarily upon one side only. It is commonly ushered in by chills, fever and a hard brawny swelling below the jaw on one side extending into, and involving that half of the floor of the mouth. The febrile reaction is usually intense and the inflammation at times so violent and septic as to endanger life, either by extension of the septic process to the lungs or by general septicemia.

The following case of Ludwig's angina, probably secondary to tonsillitis, and subsequently followed by a violent septic neuritis, is considered of sufficient interest to merit record:

E. G., male, white, aged twenty-four years, married and gives an excellent family history. He had a healthy childhood and since a mild attack of typhoid fever at nineteen years of age and a chancre four years ago; has suffered no other sickness until the development of the disease which led up to his present condition. He states that his chancre was accompanied by an indolent, non-suppurating bubo, but no eruption followed, neither had he any falling of the hair nor other secondary symptoms of syphilis.

In March, 1895, after a few days' discomfort from a mild inflammation of the left tonsil, he was attacked by severe pain in the left face which was quickly followed by a large brawny swelling on that side of the neck below the jaw, involving the floor of the mouth. He developed chills, high fever and delirium. The throat was unsuccessfully lanced on the inside five separate times. Two weeks later the fever had subsided sufficiently to allow him to go to his home at Erie, Pa.; the swelling, however, remained about the same. Dr. Silleman of Erie was seen and ordered poultices, after which two free incisions were made immediately below the angle of the jaw, a free discharge of pus took place, the fever subsided and convalescence was established. Three or four days after the abscess was opened he began to feel a numbness of both little fingers. This numbness spread from finger to finger, thence to the hands, forearms and finally to the arms until both members were without sensation. Simultaneously the toes, feet, legs and thighs were successively affected. The progress of the anesthesia was rapid, and he states that in less than a week's time the whole trunk and limbs were completely insensitive. Coincident with the development of the anesthesia marked motor weakness took place. Double wrist and double ankle-drop developed and the muscular power was so completely lost that he had to be fed and was unable to turn in bed without assistance. Previous to the development of the paralysis and anesthesia he suffered from hyperesthesia, which was so marked that the rubbing of the bed-clothing was agonizing. His palate was paralyzed and liquids regurgitated through the nose for some weeks. Luckily neither respiration nor circulation were embarrassed at any time. The vesical sphincters were not weakened but the anal sphincter was slightly affected. He lost his sight and was totally blind to everything except light perception for a period of three weeks. At no time did he suffer from pain in the back or limbs, and deep pressure, because of the anesthesia, caused him but little pain. He came to the Cleveland General Hospital in the early part of the following June and was entered in the service of Dr. Perrier and it is to him and Dr. Friedman that I am indebted for the opportunity of observing and reporting this interesting case.

S. P.—The patient is of medium size, light complexion, looks younger than his years. The thoracic and abdominal organs appear to be perfectly normal. The inguinal, epitrochilar and postcervical glands are enlarged, but beyond these I can find no other evidences of syphilis. He is strikingly ataxic, being unable to walk without assistance or a cane. On rising from a chair considerable weakness of the legs as well as ataxia is evidenced. He has no tremor or incoordination in the upper extremities. His knee-jerks, including all of the deep reflexes, are absent. The plantar and other superficial skin reflexes are also absent. The pupils react slowly to light and still more slowly to accommodation. The limbs are well rounded and present no atrophy of any muscle or group of muscles. Palpation reveals no special nerve tenderness. There is some loss of tactile sensation in the hands and also in the feet and the legs below the knees. He states that while walking he has a sensation of a cushion between the soles of the feet and the floor. He gives no history of fulgerant pains. Excepting a weakness or perhaps a paralysis of accommodation he shows no ocular palsies, and the disks and retinal vessels are normal. The fields are also normal to form and color. Six months later examination revealed a return of reflexes and almost complete disappearance of the ataxia. The rectal sphincter had also recovered its power.

## REPORT OF A CASE OF STAMMERING, AND METHOD OF TREATMENT.

BY JAMES MOREAU BROWN, M.D.,
OF CHICAGO;
ASSISTANT PROFESSOR OF LARYNGOLOGY, CHICAGO POLICLINIC.

There are so many impediments of speech that are allowed to continue without any effort to better their condition, that I desire to report an interesting case of stammering, outlining the methods of treatment and the results obtained.

*Case.*—A. G., by occupation tailor; was referred to me by Dr. Hugh T. Patrick, in November, 1902. Upon arrival in this country from Russia, two years ago, the patient was able to speak only the Hebrew language. He has taken lessons in English for one year, and now understands this language fairly well. He first attributed his stammering to nervousness, but upon examination no distinct lesion could be found which showed that the cause of his stammering was nervousness. It was also proved by the fact that when he gained control of the organs of speech, the nervousness subsided. He was questioned in regard to hereditary influences, and his former mode of life, but could not give any apparent cause for his defective speech. His stammering is greatly aggravated when in the company of strangers, and, at times, he is unable to utter a word. He has a tendency to speak rapidly and to repeat himself. Breathing is nasal, but no deformities of the upper air-passages were detected, nor do they become irritated from his stammering.

When the patient first came under my observation, I found that he read with extreme difficulty, this being due to imperfect breathing and difficulty in pronunciation. At the commencement of treatment he was taught to breathe deeply from the diaphragm, with frequent intervals of rest. Later he was given breathing exercises, which consisted in raising the arms slowly above the head with inspiration, and lowering them upon expiration. The breath was held with firmness and released with energy. Slow speech was taught, with assurance, and when the patient became embarrassed, more attention was given to slowness and deliberation. Cold sponging of the upper part of the body daily, with careful attention to the general health and hygienic surroundings were insisted upon.

At the end of two weeks he was able to breathe deeply for perhaps 20 successive times, without becoming dizzy or tired. Exercises for strengthening the muscles of the tongue and lips were instituted, with the teeth overlapping and held firmly together. At first letters were practised, but as treatment advanced, words and finally sentences were articulated with perfect ease. Considerable difficulty was experienced in pronunciation, for the reason that the marked Hebrew accent interfered somewhat with advancement.

At this time the patient has gained considerable in chest expansion; he reads slowly and carefully, with a distinct, intelligent articulation.

It is not my intention to convey the idea that all difficulties of speech may be completely cured by breathing, but I desire to show how beneficial it is, and how important an auxiliary it is in the treatment. Many difficulties of speech can be obviated in the earlier years of these patients' lives, according to Mrs. Thorpe, in her excellent work on "Speech Hesitation," stating that many parents have saved their children by stopping them when hesitating in speech and allowing them to continue without hesitation, thereby lessening the tendency to habit formation.

Often we find the speech difficulty due to a condition of the upper air passages, such as adenoids, abnormalities of the septum, or an abnormal frenum linguæ, or to some distinct condition of the nervous system, all of which must be carefully considered in the treatment.

## MEDICAL PROGRESS.

### MEDICINE.

**Dietetics.**—In an address on the subject of dietetics, Robert Hutchison (Lancet, April 25, 1903) offers the following facts in regard to the principles which should guide the physician in the dietetic treatment of renal disease: He says that he would draw a sharp distinction between acute and chronic cases. In acute nephritis, especially so long as blood is present in the urine, an exclusive milk diet is, by common consent, that which gives the best results. Although clinical experience is quite conclusive on this point, scientific explanation of the advantages of milk is not yet forthcoming. To some extent, of course, it acts as a diuretic and it has the advantage of being free from those extractive matters which meat contains, and which appear to be irritating to the kidneys. The fact that milk is an intestinal antiseptic may also help to explain its suitability, for under its use products of putrefaction such as the ethereal sulphates which are normally absorbed from the bowel and excreted by the kidney, are greatly lessened. A patient with chronic renal disease must maintain a vigorous heart, for if his heart fails his blood pressure fails, his urine becomes scanty, and he is apt to pass into uremia. But a vigorous heart cannot be maintained on milk alone, and, as a matter of fact, in one patient so affected cardiac failure was beginning. Hence it is that in chronic renal disease meat must not be altogether abolished from the diet, although food which contains only the extractives of meat, without its albuminous elements, should be rigorously avoided. Animal food tends to send up the blood pressure and in cases where the arterial tension is high it often requires fine steering to avoid the risk of an apoplexy on the one hand or cardiac failure and uremia on the other—but the latter risk is quite as great as the former, although it is often forgotten. The fallacy in the case of the patient who ate white meats, but not red, is, as has recently been shown by Von Noorden and his pupils that the white meats are as rich in extractives as red, so that the substitution of the former for the latter in the diet, though harmless, is also devoid of advantage. While treating the subject of fallacies in chronic renal disease, the author indicates another. It is commonly said that even in cases of chronic nephritis in which there is a considerable amount of dropsy, as, for example, in large white kidney, one should allow the patient to drink plenty of liquid in order to promote elimination. Now, it has recently been shown by careful clinical observation that this idea is groundless. Restriction of fluids in such cases does not interfere with excretion, but has the advantage of helping to remove dropsy. One need have no hesitation, therefore, in recommending a dry diet to such patients.

**Infusion for Diabetic Coma.**—Studelmann was the first to recommend this method of treatment and several recoveries have been accredited to it. In a case recorded by David Young (Brit. Med. Jour., March 7, 1903), although the termination was fatal, there seems no doubt that life was very much prolonged and the patient almost saved by this therapeutic agent. Because the case seemed to fall under that group of Friedreich's, in which, after exertion, the patient was suddenly attacked with weakness, somnolence, deepening unconsciousness and death within a few hours after the beginning of the attack, its history is of particular interest. The patient was a male, thirty-nine years of age who had suffered from diabetes for nearly three years. The day after admission to the hospital he passed 136 ounces of urine, containing 310 grams of sugar. No diacetic acid was present. He suddenly became sick at the stomach and complained of severe pain in the head and abdomen. Ordinary treatment was instituted for this, but in two hours he became very drowsy and his breath had become sweet. The urine suddenly became charged with diacetic acid and the quantity was reduced to 80 ounces and the sugar to 200 grams. The next day he was drowsy and could be roused only with difficulty. The pulse was 130 and the respirations 26. Thirty ounces of normal saline solution were given intravenously after eight ounces of blood had been withdrawn. Two hours after this he had revived to complete consciousness. He did not, however, remember anything about the infusion. Pulse was 102 and respirations 22. By noon of that day he was able to take a fair meal. Late in the afternoon he again became drowsy. Five ounces of blood were removed and 30 ounces of saline solution again injected. At 10 P.M. he was again conscious. The following day the pulse was 93 and the respirations 20. In the evening he was injected with 20 ounces of fluid containing liquor sodii in addition to the sodium chlorate. The diacetic acid had at this time disappeared from the urine. On the following day he was able to write a letter. This treatment was continued until finally on the eleventh day he died, apparently from pericarditis. During the eleven days 210 ounces of fluid were injected with 75 drops of liquor sodii and 13 ounces of blood were withdrawn. The addition of the liquor sodii did not seem in this case to increase the stimulating effect over the ordinary salt solution. The infusions were carried out painlessly under cocaine infiltration.

**Diagnosis of Perforated Gastric Ulcer.**—For diagnosis and treatment, C. B. Maunsell (Dublin Jour. of Med. Sci., May, 1903) divides the cases into acute, subacute and chronic, with a subclass of cases of double onset. Chronic perforations are those in which adhesions have formed before perforation and the symptoms are either evanescent or a subphrenic or other abscess results. The subacute are those in which the stomach is usually empty, the perforation small, and the limited peritonitis may subside or form an abscess. In acute perforations extravasation is general from the start. In those of double onset an abscess follows one of the varieties and later bursts causing general peritonitis. The most frequent subjects are young women, though men are by no means exempt. In the acute variety the onset is sudden, with intense and stabbing pain. The patient may feel that something has given way, and may have the sensation of trickling hot fluid; the pain may radiate, and may eventually be referred to the right or left iliac fossa or become general over the abdomen. The epigastrium is very tender, but in double onset cases iliac pain may be most prominent at the second onset and may be mistaken for appendicitis. Collapse is a variable symptom, but vomiting is common just before the onset and when peritonitis is established. There may be intestinal paresis or diarrhea. The face is dusky, anxious, drawn, the manner restless, decubitus dorsal, knees and hips flexed, respiration shallow, pulse regular, of good volume, 60 to 110, temperature normal or subnormal. A frequent, wiry pulse means a late case. The abdomen may be distended, is rigid and tender, and friction may be felt in a few cases. If respiration is stopped pressure can be tolerated. Tympany is uniform, but the stomach retains its own peculiar note. A perforated stomach is not necessarily a collapsed stomach. Dulness in the flanks is a late sign, but the liver dulness is diminished or absent owing to paralytic distention of the intestines pushing up and rotating the organ. These are really the symptoms of any perforative disease, and means must be taken to determine what has perforated. But there are two non-perforative diseases that cause much trouble in diagnosis, viz. diaphragmatic pleurisy and acute pancreatitis. Perforative lesions in the lower abdomen are commonly due to tubal or ovarian abscess, perforation or gangrene of the appendix, and ulceration and sloughing of the intestines. In these the pain and rigidity are low down or referred to the umbilicus, the peritoneal surface of the bladder may become inflamed and induce painful and frequent micturition, and frequently pain is referred to the external genito-urinary organs. This latter is sometimes an early sign of typhoid perforation. In the upper abdomen the common perforations are gastric, duodenal, abscess of liver or empyema of the gall-bladder. The subacute and chronic cases come under the head of subphrenic abscess, etc.

**Dangers of an Exclusive Diet in Nephritis.**—The necessity of such a diet has been very much doubted by numerous observers during recent years. In discussing this subject, A. C. Croftan (Am. Med., June, 1903) bases his arraignment in the following facts: In selecting a dietary in cases of acute inflammatory or of chronic destructive lesions of the kidney, three indications must be met with, the diet must contain qualitatively and quantitatively all that is needed to maintain the nutritive equilibrium of the patient, must contain as little as possible of materials that in their ultimate passage through the kidneys can irritate the renal epithelia, and while sparing the kidney function must not overtax or otherwise injure, the function of other organs. As regards the first, the author believes that there is too little iron in milk to adequately supply adults with this element. This lack of iron may in part be responsible for the anemia which is so common in cases of chronic nephritis where milk is exclusively given. Aside from overloading the stomach and flooding the circulation with enormous quantities of water, we force the patient to assimilate and disassimilate nearly twice as much albumin as he is accustomed to and requires. This causes grave dangers to the renal epithelium and the cardiovascular apparatus, for the water, urea, and phosphates which are carried to the kidneys in large quantities when an exclusive milk diet is maintained, act as irritants to the same. The stomach and the heart are also affected, the former by continuous dilatation and the dilution of the gastric secretions, and the latter by the increased blood pressure due to the large amount of ingested fluids. A substitute diet should in acute cases contain a minimum of proteids and of water. A small quantity of milk with cream, meets all the requirements, and underfeeding rather than overfeeding should be indulged in. In chronic cases the proteids should also be relatively small, and the fats and carbohydrates may be increased. Only a relatively small amount of fluid is necessary. Fixed rules in regard to the feeding of nephritics cannot be formulated, as the etiology of the disease has not been fully determined, and it is not definitely known whether we are dealing with a primary local affection or a secondary renal manifestation of a general toxemia. Clinical experience seems to speak for a more liberal feeding of kidney cases than is usually adopted, and is decidedly against one-sided alimentation.

**Unilateral Disease of the Kidney Simulating Stone.**—An absolute and positive method of diagnosing renal stone is still wanting, and there are probably other pathological conditions which closely simulate the same symptom complex. These are discussed by J. Ransohoff, (Jour. Am. Med. Ass'n, May 30, 1903). The pain may be simulated by tuberculosis, tumor, hydronephrosis, or by microscopic changes affecting the secreting, circulatory, or supporting framework. Hematuria is usually associated with stone, but in 20 of the author's cases it was marked by sparseness. There are certain cases of chronic nephritis in which albumin and casts are often absent for months, and both pain and hematuria present, and it often manifests itself as a unilateral disease. The author reports a case of atypical chronic inflammation of the kidney, in which the diagnosis was made from a thin section of the kidney removed at the time of an exploratory operation for suspected stone. Recovery followed and the author believes that capsule splitting and section of the kidney will doubtless relieve many cases which simulate stone and which, because of the impossibility of making a positive diagnosis, are not now subjected to an exploratory operation. It also seems advisable to make a microscopical examination of a small section of the kidney removed at this time.

## SURGERY.

**Relation of Cholelithiasis to Acute Pancreatitis.**—Acute pancreatitis has formed the subject for much well-merited discussion during recent medical conventions and important etiological facts are bound to come from so much interest and investigation. J. Wiener (N. Y. Med. Jour., May 16, 1903) in a careful study of the reported cases of acute pancreatitis is forced to believe that there is often a casual relationship between the cholelithiasis and the acute pancreatitis. In many instances a gall-stone had occluded the common opening in the duodena through which the secretions from the liver and pancreas are discharged. An occlusion of this papilla of Vater allows the bile to pass upward into the pancreas and is thought by many to be an exciting cause leading to an acute inflammation of the pancreas. As the symptoms of pancreatitis are very indefinite, as a rule, an early exploratory operation should be advised in those obscure conditions for early relief of obstruction to the flow of pancreatic secretions is the only possible way of saving those usually fatal cases of pancreatitis.

**Septicemia with Unusual Symptoms.**—It is well known that inflammation of the parotid gland sometimes follows traumatism or diseases of the abdomen, or pelvic disease; but rarely occurs after troubles in other parts of the body. If typhoid fever be considered an abdominal malady, John Van Rensselaer (Am. Jour. of Obstet., May, 1903) finds that parotitis takes place in 13 out of 2,000 cases, while in scarlet fever this condition only occurred once in 7,000 cases. When it follows some disease of the abdomen, or of the pelvic organs, in nearly 95 per cent. of the cases it occurs as a solitary complication. When it takes place after an ovariotomy or a confinement there have elapsed ten days or two weeks and it never goes on to suppuration. The author cites a case of his own where parotitis came on after an operation for appendicitis had long been performed. It was accompanied by acute nephritis, and the parotid gland became gangrenous.

**Complete Nephro-ureterectomy**—By this J. Wesley Bovée (Am. Gyn., April, 1903) means the complete removal of the kidney and ureter at one sitting. A. Kelly, as far as the author's researches go, was probably the first to perform this operation and that in 1895. Dr. Bovée reports a case of tuberculosis of the right kidney, ureter and bladder, with complete nephro-ureterectomy and the patient entirely recovered. This with 16 other such cases, makes a total of 17 nephro-ureterectomies in the literature. Tuberculosis was indication for the removal in fourteen of these. In the other three there were present either papillomatous tumor at the vesical end of the ureter, hydro-nephrosis and hydro-ureter, and calcarious pyonephrosis and pyo-ureter. The conditions which would ordinarily call for the operation are malignant disease of the uterus, severe traumatic injury along to duct, multiple strictures along the duct as a result of ureteritis. Renal calculi sometimes occur in tuberculous kidneys and there are fourteen such cases on record; but three of them were in males. As 82 per cent. of the cases are tuberculous, it would be dangerous to operate except by the extraperitoneal route, lest the peritoneum be infected. In operation, except where there is malignancy, a complete recovery may be expected. Of the 17 cases reported but two died and these were by the same operator. They were probably severe and undoubtedly there was some involvement of the remaining kidney.

**Splenopexy.**—In movable, hypertrophied, malarial spleen, C. Mariani (Gazz. Osped., May 3, 1903) holds that fixation of the organ in its normal position by sutures is the rational procedure; and he makes a plea for the conservation of the viscus whenever possible as, in his belief, there is at least a temporary alteration in the blood crasis after splenectomy, this lowering organic resistance during the process of repair; and aside from the greater danger to life in the latter operation, it has the disadvantage of inducing, in a certain proportion of cases, articular tumefaction, osseous pains and temporary enlargement of the thyroid, tonsils and other lymphatic organs. On the other hand, splenopexy preserves to the organism a viscus which contributes no insignificant part to the hematic function; and in the 14 cases of movable spleen treated by splenopexy, including the author's, a cure has been effected in all.

**Drainage of the Knee-joint in Suppurative Arthritis.**—In a study on the subject of drainage of the knee-joint is suppurative arthritis, H. L. Barnard (Lancet, April 25, 1903) says that the knee-joint is divided into two main pouches behind by a septum projecting forward from its posterior wall and formed in order from behind by the posterior ligament, the crucial ligaments and the ligamentum mucosum. Each of these pouches receives the posterior protuberant extremity of the corresponding condyle in extension. These pouches terminate above and behind the condyles in sacs which are beneath the corresponding head of the gastrocnemius. The outer pouch also sends a synovial prolongation along the popliteus tendon. The usual method of draining the knee-joint by a tube passed below the patella and another passing up into the subcrureus bursa leaves these two posterior pouches untouched. The leg in such cases is kept extended on a splint which closes the way to the front of the joint by a coaptation of the bony surfaces. When these pouches rupture from distention with pus their anatomical position directs the pus up to the thigh between the hamstring and the great adductor and down the calf between the gastrocnemius and the deep muscles. It is difficult, if not impossible, to drain both these collections of pus at once. For if the leg be elevated, the lower will drain, but the upper will not, and vice versa if the leb be lowered. It is clear, then, that each of these posterior pouches must be drained by an incision placed as far back as possible. On the inner side, the knee being fully extended, the protuberant extremity of the condyle is cut down upon, and forceps are pushed under the head of the gastrocnemius and withdrawn open. A tube is then inserted. This is more easily done if the knee be flexed as the tube is put in, since this relaxes the gastrocnemius and posterior ligament. This incision will be found between the sartorius and gracilis tendons and usually just behind the internal saphenous nerve. In a similar way the pouch behind the outer condyle is cut upon: the incision passing between the biceps tendon and the gastrocnemius, and just behind the external popliteal nerve. It is important, therefore, in both cases, to be careful in the use of the knife, and to see that the incision is in the line of these nerves. When the skin has been incised, it is easy to scrape down to the capsule with some blunt instrument. The knife may then once more be safely used to open the joint freely. Anatomical guides are useless in practice because of the inflammatory swelling; one knows that the pouch surrounds the prominent condyle, which may easily be felt, and one cuts down until the cartilage of the condyle is reached. A drainage tube should be passed across the front of the joint beneath the patella and another into the subcrureus bursa from either the inner or the outer side. This tube may be brought out through a median incision at the highest point of the joint anteriorly. The discharge from the anterior tubes rapidly diminishes and the wounds heal some time before the two posterior incisions cease to discharge and close. This is proof that the drainage is practically as well as theoretically correct.

**The Relation of Meconium to the Fetal Appendix.**—In a study on the relation of meconium to the fetal appendix Alexander Low (Lancet, May 2, 1903) says that, in the course of a systematic examination of the fetal abdominal viscera, he had frequently noted the presence of meconium in the appendix, and in looking up the literature on the subject, he has, so far, been unable to find any reference to this fact. Hence, he publishes his notes on this point. He gives a table which sets forth the disposition of the meconium in the intestine in cases of 25 consecutive fetuses. In every case the fetus was in good preservation and the abdomen was examined while the fetus was still fresh. Although the series of fetuses examined is small, still, from the tabulated facts it appears that the disposition of the meconium with regard to the different portions of the fetal intestinal canal is as follows: (1) Small intestine—meconium begins to distend the lower half about the middle of the fourth month and continues to do so to a variable extent till the end of fetal life. (2) Large intestine—meconium begins to distend the rectum at the fifth month, thereafter tending to accumulate in the cecum and then gradually distending the whole of the large intestine, so that after the seventh month dark-green meconium distends the large intestine in its whole length. (3) Appendix vermiformis—meconium was noted to be present in the appendix as early as the middle of the fourth month and thereafter in nearly every case it was present in the appendix till the end of fetal life. The amount of meconium in the appendix varies; it seems to depend somewhat on the condition of the cecum—if the cecum is distended then the appendix is always distended, but there may be meconium in the appendix while the cecum is practically empty.

**Treatment of Empyema by Continuous Drainage.**—The disastrous results which sometimes follow simple open drainage of empyemas have resulted in a number of suggestions for obliterating the cavity. The proper material for filling up this space is the lung itself and the correct procedure consists in inducing the parietal pleura and the lung to grow together. One of the later methods which has met with some success, is that devised by Perthes, who has designed a quite elaborate apparatus by which a pressure is maintained in the pleural cavity less than that of the atmosphere. This consists of a properly constructed covering for the wound, a form of continuously acting air pump to remove the air from the pleural cavity, and a collecting vessel for the pus, the latter being provided with a manometer, W. Van Hook (Jour. Am. Med. Ass'n, May 30, 1903) describes an extemporized apparatus, a Bunsen pump, a garden hose, a three necked Wolff bottle and a manometer. The dressing applied to the chest wall is of rubber dam, bicycle cement being used to seal the tube to the opening in it, and to seal the dam to the chest wall to prevent wrinkling. The edges are then fastened with adhesive plaster. The method was used in two cases, one acute and the other chronic, with good results. It may be applied in a few days after the first incision has been made.

**Symptoms and Diagnosis of Stone in the Kidney.**—In a study of symptoms and diagnosis of stone in the kidney, R. C. Lucas (Lancet, April 25, 1903) says, in speaking of the various conditions liable to be mistaken for renal calculus that (1) Tuberculosis of the kidney is often mistaken for renal calculus. Hematuria, lumbar and reflected pains, pyuria and frequent micturition may be present in either case. Yet there are many distinguishing points: (*a*) The hematuria of tuberculosis may be striking in the early stages, but is then accompanied by little, if any pain, whereas the hematuria of calculus is usually preceded by pain and excited by exercise. In the later tuberculosis the hematuria is often slight and sometimes absent. (*b*) The pyuria of tuberculosis is early and often precedes for months lumbar pain. (*c*) The pain of tuberculosis is a continuous, dull, aching pain, not liable to the intense exacerbations or to the wide radiations of calculus, increasing as the disease extends and the kidneys become suppurating cavities. Taking these two symptoms, pain and pyuria together, he has for years formulated as an axiom for students that "pain in excess of pus indicates stone; pus in excess of pain, tuberculosis." (*d*) Slight chilliness, not amounting to rigor, followed by rise in temperature are frequent in tuberculosis. The temperature at night is often above normal. Renal calculus seldom causes increased temperature. (*e*) Examination of the pus will occasionally discover the tubercle bacillus, but too often it fails to be trustworthy as a negative test. (*f*) An important indication of tuberculosis in women is the tender, thickened ureter, felt through the roof of the vagina as it passes by the uterus to enter the bladder. (2) Movable kidneys give rise to attacks of colic accompanied by nausea and vomiting similar to what are observed in the condition of renal calculus, and always improved by rest; but the urine in these cases is almost invariably normal, though liable to vary in quantity if the mobility has given rise to intermittent hydronephrosis. The discovery of the abnormal mobility of the kidney helps to clear the diagonsis. The aching kidneys described by Matthew Duncan were, for the most part, kidneys unduly mobile, a condition which, at the time he wrote, was but little understood. (3) Lithiasis and oxaluria may occasion hematuria and severe pain in the loin, but the pain is not unilateral and the condition as a rule is cured by freely flushing the kidneys by drinking large quantities of distilled water. (4) Acute Bright's disease and chronic granular or gouty kidney may give rise to pain in the loin and hematuria, but the persistence of the albumin when blood is absent, the low specific gravity of the urine, and the usual indications of arteriocapillary fibrosis in the chronic disease will serve to point out the nature of the malady. (5) Villous growth in the pelvis of the kidney is a rare affection which may give rise to very free hemorrhage without pain or appreciable tumor. Clots may indicate the source of the hemorrhage and portions of growth washed away may show the nature of the disease. (6) Malignant growths of the kidney first indicate their presence by hemorrhage and a rapidly growing tumor, rather than by pain, which is usually a late symptom, dependent on pressure upon other organs. (7) Biliary colic and distended gallbladder may be mistaken for right renal calculus and enlarged kidney, but the colic is hypochondriac and seldom penetrates much to the back. Examination of the urine and of the excreta will assist much in the diagnosis. The occurrence of jaundice and light-colored stools and the discovery of gall-stones among the feces would indicate the cause of the colic. (8) Caries of the spine, especially in children, may give rise to one-sided backache and radiating pains in front as a lumbar abscess is gradually forming, very similar to what is met with as a result of renal calculus. The pressure of the abscess on the renal vein may even cause hematuria. (9) Colic of the appendix ceci is another condition confounded with light renal colic. The appendix varies so much in size and position—one was shown at a meeting of the Anatomical Society last year nine inches in length and directed upward under the liver—that it is not always easy to ascertain whether the colic takes origin in the appendix or pelvis of the kidney and ureter. The ordinary cases of appendicitis are generally sufficiently indicated by the signs of localized peritonitis, tenderness, fulness and partial obstruction, but it is not these cases that are most liable to be confused with renal colic. The cases to which he refers are those which give rise to little or no signs of inflammation, but depend upon irregular spasmodic contractions of the muscular coats of the appendix in their endeavor to expel some fecal contents, concretion or foreign body.

**Fracture of the Femur.**—Some interesting deductions are drawn from a study of the cases of fractured femur occurring in three of the larger hospitals in New York City, by J. B. Bissel (Phil. Med. Jour., May 30, 1903). In none of these 316 cases was there any operation performed and all were treated by the side or the Hodgen splint, and Buck's extension apparatus. A general routine method seemed to be followed in all cases and no allowances made whether the fracture was intra- or extracapsular or whether it was impacted. It was not possible to determine the after-result very accurately, except in one hospital where 44 per cent. of all cases treated were discharged, "cured," and 41 per per cent. "improved." In all three hospitals the patients were either kept in bed too long or else not long enough, according to the opinion of the author. If the broken neck would not unite at the end of six weeks under treatment while confined in bed, it is hard to believe the possibility of its uniting at the end of eight or nine weeks, especially as these splints do not in most cases prevent motion between the fragments or secure perfect coaptation. The writer's experience leads him to more optimistic view than that usually held and he suggests that the best treatment would be an open operation with the pegging or the wiring of the fragments until bony repair takes place.

**Treatment of Bone Cavities.**—The after-treatment of cavities of bone, formed by the extensive chiseling necessary in the surgical management of osteomyelitis, is frequently performed with difficulty. The following simple, ingenious advice is offered by C. Beir (C'blatt. f. Chir., May 9, 1903), the tibia being taken for an example. After the bone has been liberally cut away the flaps of the skin are turned downward into the cavity thus left. Instead of tacking them there with carpet tacks or other similar device, Beir simply makes a piece of gauze into a roll sufficiently wide to make pressure upon the flaps as they lie in position. The gauze is secured and gentle pressure maintained by a series of interrupted Lembert sutures, which are passed through the skin of the sound part of the leg, just beyond the bases of the skin flaps. The simplicity and the value of this ingenious procedure will commend itself to every operator.

**Points in the Technic of Murphy Button Anastomosis.**—After a review of the familiar mechanical points which constitute a well-made Murphy button, O. Neuweiler (Arch. f. klin. Chir., 1903, B. 69, H. 4) mentions the following details as to the technic of using this most serviceable surgical device: (1) The purse-string suture should not be inserted too far back from the margin of the intestine, so that a redundant mass of intestinal wall is not gathered into the cavity of the buttons around the cylinders; (2) contrarywise, also, the purse-string suture should not be too close to the margin of the intestine, so that when the button halves are apposed, the thread pulls out and permits the bowel to slip away from the grasp of the button; (3) in cases of circular anastomosis (end-to-end anastomosis) care must be taken that the mesentery is well grasped by the suture and drawn into the button, so that only serous membrane is against serous membrane; (4) a mucous membrane which bulges into the wound should be resected before the suture is passed and after the buttons are united any masses of tissue in the way should be carefully removed; (5) the pushing of the buttons together should be done not by a single powerful pressure, but gradually and cautiously. The fingers should not press too vigorously at the mouth of the ring, so that the intestine will slip off it, or so that the purse-string suture is torn out; (6) in all cases in which an absolutely uniform apposition of the serous surfaces, each to each, has not been obtained, a supporting safety suture should be carried out to prevent late accidents.

## OBSTETRICS AND GYNECOLOGY.

**Pruritus Vulvæ, and Allied Conditions.**—While this affection is not, strictly speaking, a disease, but only a symptom of a disease, it is, like diarrhea, a symptom of such overwhelming importance that it overshadows the original disease and becomes the point of attack. E. H. Ballock (Am. Jour. of Obstet., May, 1903) defines it as a hyperesthesia of the nerves of the vulva leading to and accompanied by an intense itching. Beginning as a slight irritation it produces an irresistible desire to scratch the affected parts. This procedure naturally leads to increased inflammation, making the itching more intense than ever. Thus is established a vicious circle, the final result in severe cases being that the very existence of the unfortunate patient is rendered miserable and that life itself becomes a burden to the worn and despondent woman. Fortunately the itching is not always so severe or constant. It may be intermittent, coming on when the patient is overheated from any cause, or presenting itself, for instance, at the menstrual period only. In some reported cases it was a symptom accompanying pregnancy. A common type is a form which comes on at night. This type was present in one of the author's patients and was so severe that it interfered with sleep. The cases of pruritus may be grouped under three general heads: (1) The contact of irritating discharges. Among these may be mentioned as specially important, leucorrhea, hydrorrhea, diabetes, dribbling of the urine from any cause, urethritis and the discharges from malignant disease of the uterus or neighboring organs. (2) Local derangement of the vulva, such as vulvitis, aphtha, vulvar eruptions, animal parasites, vegetations, urethral caruncle, and the growth on the vulva of short bristly hairs. General diseases of the nervous system or those diseases leading to debility of the system. One of the most interesting diseases of this region, in which pruritus is the chief and initial symptom, is that known as kraurosis vulvæ, first described by Breisky. This is a very rare affection. The alternation of atrophy and hypertrophy is characteristic of the disease. No disease of the nerves has as yet been discovered. There is a patchy hyaline degeneration of the tissues beneath the epidermis, especially in the elastic tissues. The treatment of pruritus resolves itself into a search for its cause of the disease that it accompanies and an effort to remedy it. The uterus should be examined and any discharge, however slight it may be, should be remedied by curettage or otherwise. The urine should of course be examined for sugar in view of the fact that many cases are associated with diabetes. In this connection, attention should be paid to the bladder and urethra and any dribbling of the urine corrected. Any disease of the liver or digestive apparatus should be regulated by dietary restrictions. As to local treatment, suffice to say that every powder, salve or lotion that has ever been suspected of having antipruritic properties has, at one time or other been used or suggested for this disease, with the result that our pruritic patients still continue to scratch. The success obtained in kraurosis by excision has led the author to advise this procedure in cases of simple pruritus, where, after a reasonable time, the application of the usual remedies do not prove to be efficacious.

**The Surgical Treatment of Uterine Fibroids.**—Many women have fibroids for years without symptoms, so that they may only be discovered accidentally. On the other hand, they may cause most serious disturbance. According to BROOKS H. WELLS (Am. Jour. of Obstet., May, 1903) the treatment may be either palliative or radical. Setting aside ligation of the uterine or ovarian arteries, or castration, palliative treatment is practically covered by curettage. Radical measures include vaginal or abdominal removal of the tumors and often of the entire uterus. The vaginal operation is indicated when the tumor is situated in the cervical region. Fibroids of this region are rather rare and can often be removed by a simple incision of their capsule and enucleation. Intra-uterine fibroid polyps, when small, may be removed through the dilated cervix. When too large to be thus removed they may be taken out through an incision the shape of an inverted "T" made through the vaginal mucosa in front of the cervix, separating the bladder from the uterus and dividing the anterior uterine wall to any extent that may be necessary by a median longitudinal incision. This incision is followed by but little hemorrhage and gives free access to any part of the cavity of the uterus. Even very large intra-uterine or submucous fibroids may be removed by this route by morcelation. The wound in the anterior wall of the uterus is then closed by interrupted catgut sutures and any hemorrhage controlled by placing sterile gauze in the vagina and uterus. This method is only to be recommended when the uterine appendages are with fair amount of certainty known to be free from disease. All interstitial and subperitoneal fibroids of a diameter greater than 3½ inches are best removed through an abdominal incision. The complication met with during the operations for removal of the uterus either by the vaginal or abdominal routes are mainly due to injuries to the ureters, bladder, or the intestine. The main causes of death are hemorrhage, or sepsis, leading to fatal exhaustion or general peritoneal inflammation with intestinal atony. In the hands of capable operators the mortality varies between three and eight per cent. The author has performed, up to the present writing, 106 hysterectomies for the removal of fibroids with four deaths. In 11 of the cases, vaginal hysterectomy was done with two deaths, and in 95, abdominal hysterectomy with two deaths. These four deaths were evidently due to sepsis.

**The Scope of the Vaginal Incision.**—The greatest stimulus to the treatment of pelvic and abdominal diseases by the vaginal route was inspired by the work of Pean and his followers. This line of work was quickly adopted by the Germans and in due course of time, says A. F. CURRIER (Ann. of Gyn. and Ped., May, 1903), it was employed by operators all over the world. By vaginal incision is meant any vaginal cut, whether it be anterior to the vaginal portion of the cervix, circular, or posterior to it. The circular incision has its sphere of usefulness almost as exclusively in those cases in which the uterus is to be removed, with or without the appendages whether for cancer, fibroid tumor, prolapsus or any other condition. The range of usefulness of the anterior incision, with its modifications, is somewhat more extensive. The writer thought that it was less useful than the posterior incision because of the space limitation by the pelvic bones, the proximity of the bladder, and the relative narrowness of the vagina compared with the posterior vaginal fornix. The posterior incision with its modifications affords the greatest possible working space, and it is this variety which gives the vaginal route of surgical treatment its greatest sphere of usefulness. Hemorrhage after vaginal section can be most easily checked by pressure, provided there be no large vessels involved, and there is less severe tax to our mental equilibrium than in the more formidable operation of opening the abdomen. Hernia is less liable to occur and when it does, it can be cured by a few well placed stitches. The most frequent indication for the anterior incision in operations upon the uterus is in retroflexion. It may occasionally prove valuable in making a diagnosis of diseased condition of the anterior portion of the pelvis. The following are the indications for the employment of the posterior incision: (1) For diagnosis; (2) in pelvic exudates, whether adhesive bands, plastic deposits, or collections of pus; (3) tumors of the appendages; (4) pedunculated uterine myomata; (5) intraligamentous cysts; (6) displacements of the uterus and appendages; (7) accumulations of fluid in the pelvic or abdominal cavity, not encapsulated or isolated; (8) some exigencies of parturition and of the puerperal state. There are doubtless other indications for the vaginal route which may have occurred to other observers. The most of those to which attention has been called have been suggested by personal experience or observation.

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## THE MEDICAL RESPONSIBILITY OF THE LAY PAPERS.

IN the evident and undoubted desire to disseminate information of value to its readers one of the most recognizedly careful and conservative lay papers of New York has committed an ethical wrong to which its own attention as well as that of the public should be called.

In the illustrated supplement of the *Tribune* of Sunday, June 14, under the guise of reading matter and far removed from the advertisement pages where, if printed at all, this most truthless and shamelessly libelous material should have been segregated, there appears a fulsome puff of a sanitarium.

Under a foul-smelling scum, which separates here and there to show the real character of his discourse, the author, in speaking of "The Cancer Scourge," "The Escharotic Treatment or Removal without Use of the Knife," states with a barefaced impertinence, which is equaled only by his utter ignorance that "It must be conceded that malignancy cannot be neutralized by heat, liquid air, electrical influences, Finsen or 'blue light,' or any other agency." This is bad enough, but his egregious brass gathers as he proceeds: "The State of New York has spent much money for the purpose of ascertaining the cause of cancer. . . . Millions of dollars have been wasted in the same field of research, all of which could have been saved had the investigators been clinicians." Perhaps the jovial author had in mind that some of those millions might have been well spent in adding to his sanatorium, a picture of which is presented beneath one of his own benevolent face. Further on he says: "It would be nothing short of miraculous should a knife operation prove permanently successful. . . . The only hope lies in the scientific employment of escharotics. I am the pioneer in employing what may justly be termed the escharotic method according with modern chemical and scientific laws."

This sort of stuff is wrong—and the public-spirited editor of the *Tribune* will agree heartily with this—that artful and crafty advertising of a bad and vicious principle should not be allowed to creep into his high-caste columns. It is ergot in the wheat.

The daily journals have a very distinct responsibility to the people and should close their columns to such rot. How many thousands of miserable sufferers will read this and noting that it is not an advertisement, be carried away with it! The public has learned that no one assumes responsibility for the statements of advertisers,—to the reading matter of so prominent a paper as the *Tribune* it is still ready to look for the truth. If our good contemporary wishes to present some medical truths which would really be of value, why not have a medical man expurgate the articles before inflicting them?

The Romans had the familiar sign "Caveat Emptor"—Let the buyer beware—posted over their horse marts. Is it going to be necessary to label each daily newspaper with a similar motto which, being translated suggests, "Let the Reader Beware?"

## GRAFT AND VENEREAL INFECTION.

WE publish in the Byways of Medical Literature in this week's issue of the MEDICAL NEWS, (page 1228), an abstract from the account published in a recent magazine of the method by which the laws with regard to the repression of prostitution were rendered nugatory in one American city. As we state in the Byways, we have no idea of calling particular attention or of especially condemning that single city and the political methods employed there, but desire to call attention to certain practises that are generally acknowledged to obtain and are tolerated even by the so-called better class of politicians.

Evidently there is no use looking for any repression of the dangers of venereal infection so long as without even any semblance of superveillance of any kind the social evil is tolerated so openly as is announced in the article from which we quote.

The medical profession frequently discusses the possibility of lessening venereal dangers in this country. All sorts of propositions are made, all manner of ideas and methods put forward as possible safeguards and preventives. Over and over and again it has been suggested that prostitution should be, to a certain extent at least, legalized. Needless to say this will never be possible, or at least not yet for many years with the well-known temper and disposition in these matters of our Anglo-Saxon people. The methods suggested as in actual practice in Pittsburg are, however, much more likely to be fruitful in increase of immorality than could be any legal toleration, however liberal, of this great evil. While then the medical profession of the country is looking for an ideal solution of the great problem the politicians have found the worst possible solution and are putting it into actual practice.

This is evidently a matter in which physicians must or at least are in duty bound to take great interest. It seems only right then to call their attention emphatically to the fact that while they are looking for theoretical prophylactics, the grafters in the municipalities throughout the country have found means of making our present inadequate control of prostitution not only less forceful but actually a means of encouraging moral and physical evil in many ways. Physicians should recognize their plain duty to use all the influence that they have in order to prevent the continuance of such abuses and anticipate the establishment of such unworthy conditions.

This is the time of the year when political parties are beginning to organize their adherents for the fall campaign. It is at this time therefore that physicians in the various cities should familiarize themselves with the conditions actually existing in their own municipalities, make up their minds as to the causes for evils that are allowed to exist and so be ready to state authoritatively their opinions with regard to political candidates and the parties likely to continue or even perhaps increase the evils already in existence. Too many of us who read papers with regard to the regulation of the social evil and the prevention of venereal diseases are theorists. The actual situation as it exists should show us how much can be done even by the laws already in existence and if only proper care is taken to secure their enforcement.

At the present time, long before the actual opening of the fall campaign, the animus of such investigation will readily be understood as the community's good and not any narrow partisan purpose. Actual conditions and their improvement up to the tenor of existing laws are more important considerations than any striving after ideal conditions that at best can only hope to be realized with the advent of the millennium. Present-day municipal government in this country has in this matter become a disgrace to our civilization. Medical men more than others are able to realize this and they must bring others to the same effective realization if there is to be any true humanitarian progress in our generation as regards this troublesome, vexatious problem. Definite knowledge first, a presentation of the facts, and the use of professional influence will surely accomplish more in this matter than any Utopian longings for better things.

## ECHOES AND NEWS.

### NEW YORK.

**New Maternity Hospital.**—Ground for the Manhattan Maternity Hospital in East Sixtieth street, near First avenue, will be broken within the next ten days, and it is believed that the building will be ready for occupancy about Thanksgiving Day. It will be an educational institution as well as a thoroughly equipped hospital for severe cases of surgery and midwifery. The scope of its work, as planned by the Board of Governors and Dr. Russell Bellamy, contemplates a training school for nurses, students, and physicians who wish to study the peculiar and complicated cases to be found in the tenement house districts. The Hospital is a gift from a patient of Dr. Bellamy, and one condition of the gift was that the giver's name be not revealed. The Board of Governors is made up of Moses Taylor, President; Col. Daniel S. Lamont, H. S. Thompson, Cornelius Vanderbilt, Henry Taylor, William Sloane, Frank L. Polk, and Percy R. Pyne.

**City Hospital Diet.**—The Committee on the Revision of the Diet at the City Hospital has completed its work. By the aid of the Dietitian of the Department of Charities, and with the approval of the Commissioner, a printed list of diets has been issued and supplied to the Hospital and Medical Board. The Committee has met the House Staff and explained to them the manner in which this list is to be used. That economy may be observed it is necessary that the Visiting Physicians and House Staff all cooperate with the kitchens of the hospital and the Special Diet-Kitchen. The following are therefore brought to the attention of the visiting physician: (1) Unless the diet is specified by the Visiting Physician, the patient will receive the Regular Diet; (2) The diets may be ordered by simply stating the name by which the diet is known. The composition of such diet may be ascertained by referring to the Diet Card, which will be found in every ward; (3) Most of the diets, other than the Regular Diet, also all of the Extra Diet is prepared in the Diet Kitchen, not in the Regular Kitchen. In ordering, therefore, these diets and extra articles the Physician will recognize, that these should only be ordered if the condition of the patient actually requires such extra expenditures and work; (4) The nurse in the ward will receive the orders for Special and Extra Diets, recording the name of the Physician giving the order. These orders must be signed by the Head Nurse; (5) The House Physician or Surgeon is authorized to order one extra article from the Diet List a day—for any one patient. More than this can be ordered by the Visiting Physician or Surgeon only; (6) The House Physician or Surgeon is authorized to order any of the Special Diets—as they stand upon the Diet List.

The Commissioner, the Dietitian and the Committee have given this matter of the Diet much careful thought. The diets, being planned on economic and scientific principles, the visiting physicians are requested to observe the above, in order that extravagance or misuse may not compel curtailing our present diet facilities.

**Loomis Sanatorium.**—In response to numerous appeals, the Loomis Sanatorium has determined to admit a limited number of patients, in the first stages of tuberculosis, who shall be suitably recommended by their family physician, and whose means do not permit of considerable financial demands at the constant rate of $10 per week covering all necessary expenses, except laundry. For the present, accommodations of this class are to be limited to twenty patients. These must be "ambulant" cases without such severe constitutional disturbance or advanced lesions as demand infirmary care. And for obvious reasons they must be such persons as would not be objectionable to other patients of the institution. They shall have all privileges of the ordinary Sanatorium patient with respect to the Edson-Aldrich library, the casino, golf and croquet grounds, etc. These accommodations will be at the service of the profession on and after July 1, 1903. Applications for admission should be made through the family physician to the physician in charge, Loomis Sanatorium, Liberty, N. Y.

**Recent Progress in Matters Pertaining to the Care of the Insane in the State of New York.**—Some of the measures of improvement in the care of the insane of the State of New York carried through during the past few months by the Lunacy Commission are as follows: (1) The Pathological Institute has been reorganized and more than 60 of the medical men connected with the staffs of the 14 State Hospitals have been instructed during the past winter at the Institute on Ward's Island in the recent development of psychiatry along clinical, pathological, psychological and clinical lines. The legislative appropriation for the Institute is now $25,000 annually; (2) The hospitals have been opened to medical internes in the same manner as general hospitals. Last year 16 clinical assistants entered the service in this way, and this year the number is nearer thirty; (3) The legislature recently passed the Lunacy Commission's bill for the appointment of a medical inspector to ensure a more thorough inspection of the 39 institutions under its charge, viz., 23 private retreats, 2 criminal asylums, and 14 State Hospitals for the insane. Such inspection, especially of the private asylums, in which there are about 1,000 patients, has never been adequate; (4) To remedy overcrowding, the Lunacy Commission proposes to construct a new hospital in the territory north of Albany and Troy, on the Colony system, a scheme similar to that of the Craig Colony for epileptics will be carried out. The site will be selected and plans made this year. This colony for 1,500 to 2,000 patients should be ready inside of three years; (5) Three tuberculosis hospitals, each with a hundred beds, will be constructed this summer at a cost of $90,000 at Middletown, Utica and Binghamton, on the grounds of the State hospitals located there; and the plans made by Dr. Peterson and the State Architect embody the main features of such hospitals described in the King Edward Prize Essays. In the meantime tent life for the tuberculous insane has been in vogue at the Manhattan State Hospital East (under Dr. Macdonald) for two or three years and for a shorter time at Binghamton and other of the State hospitals; (6) The country colony for a few of the working classes of the insane, as an offshoot of the Utica State Hospital, has been enlarged. A similar colony has been established at the Willard State Hospital and two are in existence at the State Hospitals at Binghamton and Poughkeepsie; (7) A new departure this year is the creation of a summer camp for between 40 and 60 insane on the lake shore about 15 miles from the Rochester State Hospital, which is now in operation to the great delight of both patients and attendants; (8) The feature of nurses' homes having been found so useful at some of the hospitals, two additional ones will be put up this summer, one at Kings Park State Hospital, Long Island, for 300 nurses, and one at the Gowanda State Hospital for 100; (9) Six or seven residences for superintendents and separate houses for the medical staffs will be put up this season at as many of the State Hospitals, thus removing the officials from the central main buildings and utilizing the vacated space for patients; (10) A bill providing for emergency commitments, recommended by the Lunacy Comission, was passed by the legislature at the last session. Copies of this law have been sent to all the examiners in lunacy of the State. It is believed that this will mean great good to the insane and prevent the all too frequent incarceration of urgent cases in jails and station houses; (11) The improved ration brought about during the past six or eight months, though entailing an additional cost to the State of $100,000 per year or more, has added greatly to the comfort of the patients and to the satisfaction of the medical officials and various visiting boards; (12) A strong effort is being made by the Lunacy Commission to increase the number of deportations of alien insane, and through the efforts of New York State the federal government passed a law making the limit three years instead of one, *i.e.*, an immigrant becoming insane within three years after landing in the United States may be returned to his own country; (13) The movement for the establishment of reception hospitals for acute curable cases in the large cities has gained strength. While the bill for the psychopathic hospital for New York city, which was to be the first of several such reception hospitals, failed to pass this year, it is believed that success will attend the Commission's efforts during the coming session.

**President Butler on the Columbia Medical Department.**—At the last annual commencement held June 10, President Butler made the following comments concerning the P. & S.: "The alumni will be glad to hear, too, I am sure, that during the year that has closed both the medical faculty and the trustees have given long and anxious thought to the pressing needs of the College of Physicians and Surgeons. This great institution, so long the pride of the medical profession in this city and an ornament to the city itself, has, like the university as a whole, suffered because of its very success. The number of students crowding its doors has become larger than its lecture halls and laboratories can contain; its curriculum has needed readjustment in order to be fully abreast of the most advanced medical education of to-day, and its clinical facilities are in need of constant extension in order that its opportunities to teach and to demonstrate may keep full pace with the practical demands of the physicians of to-morrow.

"The faculty, after careful thought and consideration, have adopted and put in operation a new and thoroughly revised curriculum, which uses much of the time heretofore devoted to didactic lectures, for increased amounts of laboratory work in the sciences ancillary to medicine and surgery, and for additional practical instruction in the appearance and treatment of disease in dispensaries and hospitals. In the Department of Physiology the provision for adequate laboratory instruction which the head of the department has so long desired will hereafter be made. An entirely new Department of Pharmacology and Therapeutics has been organized and placed in charge of a group of thoroughly trained and successful scientific men, who will spare no effort to develop this important branch in the fullest possible way. The professor of pathology has been able to effect certain changes and improvements—minor, perhaps, but by no means unimportant—in the laboratory work of his great department. In all of these laboratory subjects it is the aim of the faculty so to divide the large classes and so to organize the staff of instruction that every student will have full opportunity for individual work and that not more than ten students will be assigned any given time to a single laboratory instructor.

"Similarly, great advance has been made in the development of the clinical side of the study of medicine. The Vanderbilt Clinic becomes more important each year and its work better organized. So long as the university is without a hospital of its own our medical school must depend on the good will of the trustees of other institutions. We are fortunate in commanding for our students certain valuable privileges in the leading hospitals of New York, but the time is not far distant when, to equip the university properly, the medical school must build and control a hospital of its own. In foreign universities the greatest medical schools command their own hospitals, and the striking success of the medical school of the Johns Hopkins University has been due in large part to the fact that a modern hospital was under its own immediate control.

"Furthermore, we are to have for the first time a reference library for students at the medical school, and I am confident that the beginning which is to be made in this direction will grow rapidly into a useful workshop for the men who are devoting four of the best years of their lives to preparation for the practice of medicine.

"Three of our medical professors longest in service and highest in repute have recently applied for relief from active service, leaving behind them records of conspicuous success as professors and teachers—Drs. Jacoby, Knapp and Weir. Two of our number will withdraw from the faculty at the close of the year in order to devote themselves entirely to the practice of medicine. Both are men in the prime of life, whose deserved reputations are certain to become yet greater—Drs. Tuttle and Peabody. We have also lost the services of the Dean of the College of Physicians and Surgeons, who has withdrawn after thirty-five years of laborious service from all administrative duties at the University. Five years ago Dr. McLane laid down the active duties of his chair and accepted an emeritus professorship, continuing, however, to serve as dean of the faculty. He now thinks it wise to withdraw from that post as well, and he leaves an institution which is in a very large part the creation of his own efforts.

"With the raising of the standard for admission to the medical school, it is expected that there will be in the autumn a falling off in the number of students making application for admission. It is also expected that this falling off will take place entirely in the number of those least competent to carry the heavy work of the course. There will be a constant raising of the standard for admission, to be followed at once by a raising of the standard of the teaching in the institution itself. All that the faculty can do, and all that the trustees can do with the means at their command, to increase the effectiveness of the medical schol and to place it upon a truly university basis has been done. Large sums of money must be at hand before the ideals of the faculty and of the trustees can be in any wise reached in this extremely important branch of the university's work."

## PHILADELPHIA.

**Dr. Gorgas Honored.**—At the recent Annual Commencement exercises of the University of Pennsylvania, the degree of Doctor of Science was conferred upon Colonel William Crawford Gorgas, U. S. A., in recognition of his brilliant sanitary administration in Cuba.

**Meeting of University Alumni.**—The Alumni of the Medical Department of the University of Pennsylvania held their annual meeting in Houston Hall, June 16. The classes of '73 and '83 had each a notable attendance. The election of officers occupied most of the time of the meeting and resulted in the election of Dr. Roland G. Curtin as President. The Vice-Presidents from this city are Drs. R. A. Cleemann, S. S. Stryker, and Wharton Sinkler.

**Site Selected for Homeopathic Hospital.**—The Commission created by the legislature of 1901 to secure a site and erect a building for the Homeopathic State Hospital for the Insane has bought a tract of land, containing 200 acres, near Allentown. It overlooks the Lehigh River, and is well adapted for the purposes of the institution. The hospital is to care for the insane from the counties of Bradford, Bucks, Carbon, Lackawanna, Lehigh, Monroe, Northampton, Pike, Sullivan, Susquehanna, Wayne and Wyoming. It has not been definitely decided what the style of buildings shall be, but it is understood that a number of the Commissioners favor the cottage system, consisting of an administration building, around which cottages for the residence and treatment of patients will be grouped.

**Smallpox Areas to be Located.**—Dr. A. C. Abbott is at work on a chart to show the areas of the city that are the centers of smallpox infection. The chart is dated from June 1, since which time there have been 87 new cases of the disease. The Municipal Hospital appears to be the center of the diseased area, as the wards surrounding it have the largest number of cases. This is attributed not to the hospital itself, but to the fact that the majority of the people in the ward that contains the hospital refuse to be vaccinated. There is no smallpox in the wards where all the inhabitants have been vaccinated.

**Dr. Browning's Fee Increased.**—The Pittsburg Orphans' Court has sustained three of the thirty exceptions filed to the decision of the Court which awarded Dr. W. C. Browning, of Philadelphia, $29,239.25 in his suit for $350,000 against the estate of the late Senator C. L. Magee. The sustaining of the exceptions in question increases the amount to be paid Dr. Browning by $4,923.93, thus making the total slightly over $34,000.

**Beef Trust Seeks to Abolish Office of Food Commissioner.**—Among the arrests of dealers for selling adulterated lard, which were recently brought about by State Dairy and Food Commissioner Warren, was the local representative of the Kansas City Beef Company, who was fined $50 and costs. An appeal from the decision of the magistrate has been sustained by the court, and the case will be tested. The company claims that the entering of the premises and securing of samples of lard was made under a violation of the constitution.

**Head Nurse for Philadelphia Hospital.**—Miss Margaret Donahue, of Boston, has been chosen to succeed Miss M. E. Smith, whose resignation takes effect in July, as head nurse of the Philadelphia Hospital. Miss Donahue was educated for her profession in the Massachusetts General Hospital. Until recently she was on the staff of that institution, where she made an enviable reputation for efficiency. She is one of the youngest women ever chosen to fill so responsible a position as that of supervising the nurses at the Philadelphia hospital.

**Result of Schuylkill Inspection.**—As a result of the inspection of Schuylkill River, by Dr. Abbott and his assistants, that official is quoted as saying: "More than two-thirds of the pollution of the Schuylkill this side of Reading comes from towns and cities between and including Norristown and Bridgeport at one end and Philadelphia at the other. I do not think that the water could be worse, and I see practically no improvement in its quality in the last four years, since the former inspection was made." A number of the assistants are at work inspecting and reporting upon special sources of pollution of the river. Several were found within the city limits of Philadelphia.

**The Late Dr. Thomas G. Morton.**—The following minute has been adopted by the Faculty of the Philadelphia Polyclinic and College for Graduates in Medicine: The Faculty of the Philadelphia Polyclinic and College for Graduates in Medicine desires to place on record its sense of deep loss in the death of Dr. Thomas George Morton, one of the Founders of the institution and throughout the period of its existence successively Professor and Emeritus Professor of Orthopedic Surgery.

Dr. Morton was an original and progressive surgeon, a bold yet conservative operator, and he possessed and exercised the qualities of the highest type of physician. Refined and gentle in manner, courteous and considerate in bearing, positive and forceful in act, he was esteemed by colleagues, respected by pupils and beloved by patients.

## CHICAGO.

**Milk Ordinance.**—After more than eight years' agitation for much-needed amendments to the Milk Ordinance there is now better prospect of success than ever before. The amended ordinance which was favorably reported by the Judiciary Committee to the City Council at its meeting on June 15, contains four important points, the foremost of which is that relating to the "skimmed-milk tag." It is pointed out in the Department Report for 1896 that the section authorizing the use of this tag had "opened the door to serious and systematic fraud"—a fraud which it was extremely difficult to cope with, since the dishonest dealer, selling for whole milk that from which the cream had been skimmed, had, in order to escape detection, only to take the tag from his pocket or elsewhere and put it on the can when the milk inspector appeared on the horizon. No honest dealer could compete with such a rascal—and the rascal was numerous enough and influential enough until recently to thwart all efforts for remedial legislation. The proposed amendment prescribes that pouring cans for skimmed milk shall be painted bright red. The color of the can will thus give due notice to the purchaser and greatly help the work of inspection. But it has taken eight years to get this near to so simple a remedy. Other amendments require the sterilization of all vessels and other articles used in the handling of milk and cream; forbid the storage of milk or cream in the farmers' delivery cans by hotels, restaurants, bakeries, etc., and make more elastic the character of the punishment for violations of the ordinance. The very fact that such amendments have been favorably reported, and without serious opposition by the fellows of the baser sort, is proof positive of the great improvement in the morals of the milk business—the result of education, not only by the Department, but by the intelligent, progressive and scientific men now engaged in the milk industry, from the dairy to the household.

**Fourth of July Wounds.**—Although the suggestions as to the treatment of "Fourth-of-July" wounds in the Chicago Health Bulletin have been widely copied and indorsed, both by the medical and the lay press, it seems necessary to repeat them in view of the following editorial comment in the current issue of the *Journal of the American Medical Association:* "We should not forget that most of these deaths are preventable if the blank cartridge wounds are properly treated as soon as they are received. It is a sad fact that the greatest number of cases of Fourth-of-July tetanus occur in boys who have gone to some physician, not infrequently in a dispensary, who, instead of giving the wound the thorough treatment that it deserves, has superficially cleaned and dressed it. The responsibility here lies with the physician who first sees the wound. A thorough surgical treatment of blank cartridge wounds, supplemented by prophylactic injection of tetanus antitoxin, when possible, would save many lives every year." Keep all "Fourth-of-July" wounds open until "thorough surgical treatment" has been secured. Do not close them up and so exclude the air. When the air is excluded, the lockjaw germ begins its deadly activity.

**To Solve the Milk Problem.**—Nathan P. Straus, of New York City, has offered to equip a plant in this city for the pasteurization of milk. The offer of Mr. Straus was made to the Children's Hospital Society, and was accepted. The plant will be located somewhere on the West Side, and pasteurized milk will be sold at cost, about two cents a pint.

**Lady Physicians Honored.**—For the first time in the history of the organization, the Chicago Medical Society has elected women physicians as members of the Board of Councilors. At a recent meeting, the Society elected Dr. Frances Dickinson, and Dr. Rachel Hickey Carr councilors for one year. Dr. R. B. Preble was elected President of the Society, and Dr. Frank X. Walls, Secretary. In addition to the two women physicians chosen, the following were elected to the Board of Councilors: Drs. W. L. Ballenger, Wm. H. Harsha,

N. S. Davis, Jr., Weller Van Hook, A. E. Halstead, C. S. Bacon, Wm. A. Evans, Frank Billings, Arthur R. Edwards, and Adolph Gehrmann. There were 37 members admitted to the Society. The total membership is now about 1,400. There were 75 applicants for membership on the available list.

**Election of Dr. Colburn.**—Dr. J. Elliott Colburn has been made Professor of Ophthalmology in the Chicago Eye, Ear, Nose and Throat College.

**Appointment of Dr. Allport.**—Dr. Frank Allport has been appointed Trustee to the Illinois Charitable Eye and Ear Infirmary.

**Flies as Carriers of Bacteria.**—Eva May Shoemaker and Alvin Waggoner, two students in the Eastern Illinois Normal School, under the direction of W. H. Manwaring, of Johns Hopkins University, have undertaken a laboratory study of this subject, with a view to determining the part that flies play in the transmission of bacteria. In order to carry on this work, they constructed a piece of apparatus, consisting of a box divided into two compartments. In the first compartment they exposed food material infected with an easily recognizable species of harmless bacteria, and in the second compartment they placed an open dish, containing agar, a substance used as a culture medium. Flies were placed in the first compartment, and, as soon as a sufficient number of them had been seen to walk upon or eat of the infected material, they were allowed to pass through a small door into the second compartment, where they had a chance to come into contact with the agar. Bacteria deposited on the surface of the agar multiply there and form characteristic colonies. To quote a review of the experiment in *School Science:* "In the preliminary experiment . . . a yellow bacterium was used. Molasses mixed with a growth of this was spread on a plate in the first compartment, and a dozen flies put into the apparatus. Half an hour later, the door between the two compartments was opened and the flies allowed to pass through. As soon as six of them had been seen to come in contact with the agar in the Petri dish, the dish was covered and put away to develop. A few days later there had grown on the agar over a hundred colonies of yellow bacteria. This experiment was repeated with red and with violet bacteria, and characteristic red and violet colonies were obtained. To prove that the germs from which these colonies grew came from the infected material in the first compartment, and not from accidental sources, control experiments were made with other groups of flies, but with no infected material in the first compartment. In no case, however, did the dishes used in the control experiments develop yellow, red, or violet colonies. To prove that the flies were the only means of transmitting the bacteria, experiments were made with infected material in the first compartment, but with no flies in the apparatus. The Petri dishes from these experiments also developed no colonies. The germs that grew into colonies in the first experiments, therefore, came from the infected material in the first compartment, and were carried to the dishes by flies. From their result the more general conclusion was drawn that 'flies are capable of carrying bacteria from one place to another, it they have a chance to come in contact with material containing these organisms.' The experimenters next undertook to determine whether flies in nature actually do carry bacteria with them. To determine this, test tubes of sterile agar were melted and then cooled to 40° C., a temperature a little above that of the human body. At this temperature the agar still remains liquid, but is not hot enough to kill bacteria. Flies were caught with sterile forceps and washed in this melted agar. The agar was then poured out into sterile dishes, where it solidified. . . . It is reasonable to suppose that if bacteria were present on the flies, some of them, at least, would be washed off by this process into the agar, where they would multiply and form colonies."

The dishes obtained from these experiments varied greatly, but all of them developed colonies, the number ranging from 50 to over 2,000. "Flies in nature," therefore, "probably always do carry bacteria with them." The writer continues: "From the standpoint of public hygiene, these conclusions are very significant; for, admitting that flies can carry harmless bacteria, there seems to be no reason why they cannot carry disease-producing bacteria as well. In fact, it has been a general belief among scientists for a number of years that they are active agents in the transmission of many diseases. Recent studies by Dr. L. O. Howard on the breeding habits of these insects furnish good evidence that they occasionally play an important rôle in the transmission of typhoid fever. It is probable that they can and do carry the germs of any disease which offers them an opportunity to come in contact with infected material." In a concluding comment on these experiments, *School Science* says: "Their work is of value, not only on account of its scientific interest, but also because it points the way to a new field of effort open to secondary students—a field whose development would have an important influence on educational methods, as well as on public health problems."

## GENERAL.

**New Health Regulations for Illinois.**—Under the provisions of a law enacted by the last General Assembly, and which will be in force on and after July 1 next, physicians and midwives of Illinois are required to report births to the County Clerks, except in the cities of Chicago and Peoria, in which reports will be made to the Commissioner of Health. A fee of twenty-five cents will be paid for each birth reported, either to the county or city official. The State burial permit law of 1901 has been repealed, to take effect the first of next month. Under the new law, physicians, midwives and coroners are required to report deaths direct to the State Board of Health, except in cities which have burial permit ordinances. In these the local authorities are required to send monthly, to the State Board of Health all certificates of death presented to them. A fee of twenty-five cents will be paid physicians and midwives for each report of death made to the State Board of Health. It is made the duty of the State Board of Health to forward all certificates of deaths to the county clerks for final record. It is believed that this law will be more satisfactory than that now in force. Under its provisions, the State Board of Health will be promptly advised of the number and causes of deaths in each locality, and will be in a position to immediately investigate any undue prevalence of disease and take the necessary action to protect the public health.

**The American Congress on Tuberculosis.**—At a conference of the officers and Advisory Committee of the American Congress on Tuberculosis, held in New Orleans, May 7, some important changes were made in the plans as previously announced. The previous plans of the Council to hold the Congress in St. Louis, in 1904, were changed, many considerations favoring Washington, D. C., as the place of meeting. A change of time of meeting was also made to April 4, 5, and 6, 1905. As there is to be an International Congress on Tuberculosis, at Paris, in 1904, it was deemed possible that some foreign delegates might be prevented from attending the Washington meeting on that account. The plan and scope of the American Congress being in reality international, the postponement of the meeting to the Spring of 1905 will give the management ample time for perfecting details upon which the success of a Congress largely depends. One committee has been already arranged to have charge of the Section on Pathology and Bacteriology, as follows: Dr. Simon Flexner, chairman; Dr. William H. Welch, Dr. George J. Adami, Dr. Thebald Smith, and Dr. F. F. Wesbrook. Committees in charge of other sections or departments will be announced later. Dr. George Brown of Atlanta, Ga., is practically the Executive Officer of the Congress, and all who desire to present papers before the Congress should apply to him. As there seems still to be a doubt in the minds of many physicians concerning the result of the vote of the New York meeting, which in 1902 adopted a new and definite plan for the next Congress, we beg to assure our readers that the new plan is being followed in both letter and spirit by Dr. Brown and the other officers elected at that meeting. *Any circulars or communications purporting to be in the interests of the American Congress on Tuberculosis, which do not appear over the name of Dr. George Brown, as Secretary, do not relate to the Congress which was arranged last year, and the organization of which has already so far advanced as to insure its success from every point of view.*

**State Board of Health Report of Illinois.**—The State Board of Health has just issued its report of the births and deaths in the State during the year 1902. This report has been delayed on account of the failure of the County Clerks to render reports to the State Board of Health in the manner required by law. In concert with all other registration states, Illinois has adopted the Bertillon classification of deaths. This method of registration is quite complicated, and it was found impracticable to require County Clerks to comply with the law. Dr. J. A. Egan, Secretary of the State Board, therefore requested the clerks to send the original death certificates to his office instead of the reports called for. These certificates have been recorded under the direction of the secretary with satisfactory results. There were reported 87,236 births, a rate of 17.90 per 1,000. The greatest number was reported from Lawrence County, where the rate was 31.09 to the 1,000. Johnson and Wabash followed closely with a rate of 29.62 and 28.41, respectively. Cass County boasts of the lowest record 10 to the 1,000. The rate in Cook County was 16.17 per thousand. It is not claimed by the State Board of Health that these figures represent the actual number of births occurring in the State during 1902. It is well-known that many physicians and accoucheurs fail to report births. The results are considered satisfactory, however, for the first year of the registration law. These births were reported under a voluntary system of notification. The total number of deaths registered during 1902 was 61,144, a rate of 12.54 per 1,000. The ten counties showing the maximum death rate are Massac 19.08, Alexander 17.93, Pulaski 17.05, White 16.61, Union 16.21, Morgan 15.05, Franklin 14.97, Adams 14.48, Sangamon 14.49, Crawford 14.30. The minimum is found in the following ten: Ogle 7.19, Ford 7.22, Kendall 7.30, Henderson 7.61, Brown 8.18, Jo Daviess 8.29, Tazewell 8.40, Jackson 8.52, Livingston 8.67, Woodford 8.72. The Cook County rate is 13.84 to the 1,000, based on an estimated population of 1,968,097. The ten principal causes of deaths in the order of their importance are as follows: tuberculosis, pneumonia, organic heart disease, accidents, kidney disease, gastro-enteritis in infants, cancer, typhoid, cerebral congestion and hemorrhage, diphtheria. The statistics show that 6,868 persons died of tuberculosis, this number being 11.23 per cent. of all deaths or 1 in every 8.90 deaths. By age the destruction from this disease was greatest from twenty to forty years, 51.2 per cent. of the deaths being reported during this period. It is the opinion of the State Board of Health that the reported death rate from tuberculosis is too low, and that many deaths reported as pneumonia, bronchitis and influenza were due to tuberculosis. These deaths were reported under the burial permit law of 1901, which required that a permit should be issued before the body could be interred. Permits were issued only on the presentation of proper death certificates. The reports, therefore, should be accurate. It is believed by the State Board of Health that the number of deaths is greater than reported. Instances have been cited to the Board in which the issuing officers failed to forward to the County Clerk the death certificates presented to them. It is not known to what extent this practice has prevailed. A comparison with the death-rate reported in neighboring states during 1902, will be found of interest. Indiana reports 13.9 to the 1,000 population, Michigan 12.6, Minnesota 9.4, and Ohio 12.35. Statistics for Iowa and Wisconsin are not available.

**Typhoid at Palo Alto.**—Stanford University did not have as alarming an experience with typhoid as did Cornell. There were fewer cases, and the relative mortality was much lower. Still, the outbreak a few weeks ago attracted wide attention, and the brief account given in *Science* possesses interest for all college towns and medical men. The most important point is that the origin of the trouble was accurately ascertained. A dairy has been in operation about four miles from Palo Alto. It was leased last winter to a Portuguese family. Two of the three houses stand on a brook, from which a wooden channel conveys water to the trough in which the dairymen washed their cans and pails. The excretum from the houses was thrown out on the ground. Rain washed it into the brook, and some of the poison found its way to the trough. A death from typhoid occurred in the dairyman's family in March, and about April 6 several cases of fever appeared in Palo Alto. Suspicion rested on the milk immediately, because the water of the town came from driven wells. Bacteriological examination showed bacilli in the milk, and on April 8 the authorities suspended the milk service. Already, however, the germs had been widely scattered. Within three weeks 150 cases developed, 80 of them being students in the university. Altogether 110 students were sick. Only four deaths were reported. At last accounts the trouble was under control. At no time, it is asserted, was there any panic.

**New Microscope in Germany.**—According to the *Evening Post,* United States Consul J. T. Monaghan at Chemnitz, writes to the State Department of a new microscope, saying: "A discovery which may have far-reaching results in the field of scientific investigation and do much toward the further solution of the problem of the molecular construction of matter was recently made by two professors of Jena University—H. Siedentopf and R. Zsigmondy. They have discovered a new method of microscopic observation, whereby ultramicroscopic particles are not only made visible, but can also be studied with a view of determining their size. A full description was recently published by the inventors in the German scientific journal *Annalen der Physik* (Vol. X, 1903), and reprints of the same are to be had by interested parties by addressing the men above named. The method consists mainly in a powerful artificial illumination of the particles to be observed. These particles, because of their minuteness, exert no material influence upon the vibratory period of the light waves, and hence appear to the observer as self-illuminating, or luminous objects, by virtue of their reflected light. Since, however, the reflected light is weaker than the original illuminating beam, it is necessary, in order to secure the advantages of an intensified illumination of the particles, to employ the principle of dark-field illumination. Heretofore, the great imperfection in the method of dark-field illumination has been the failure to eliminate all light reflected from the surfaces of the condensing lens and the microscopic objective. Whenever any of the light of the stronger illuminatory ray mingles with the weaker light reflected from the particle which is being observed, the visibility of that particle is proportionately blurred, just as the light of the rising sun gradually obscures a morning moon. Perfection in dark-field illumination has been attained when none of the light of the illuminatory ray enters the line of vision in the observation of an object through the microscopic objective, and the object is visible solely by virtue of its own reflected light. This interference of the direct light of the illuminatory ray or of its reflected light from the surfaces of the condensing lens, with the reflected light of the object under observation, is overcome through the application of the principle that when the illuminatory ray is perpendicular to the axis of the microscopic objective any direct light or any light reflected from the surfaces of the condensing lens can no longer enter the line of vision of the observer, and hence can no longer interfere with the reflected light of the particle to be observed; provided that the condensing lens for the illumination of the object and the microscopic objective for the observation of the object are so adjusted as to meet at a common focus. It will be seen that with this construction no light reflected from the condensing lens, or passing through it directly, can possibly enter the microscopic objective, thereby permitting the observer of the particle to view the same solely by virtue of its own reflected light. This method of dark-field illumination enables the employment of the most powerful sources of illumination for microscopic observation, and for this reason must be considered as a marked advance in the technique of this field. The principle involved in this new method is well illustrated by the common phenomena of the 'visible sunbeam' in a darkened room which is penetrated by a ray of light. Dust particles in the path of the ray, hitherto invisible, become visible when the eye of the observer is at right angles to the direction of the penetrating ray. If now, the illumination is strengthened through the employment of a more powerful source of light and a condensing lens, and the power of the eye is strengthened by means of a microscopic objective, we have all the essentials of the new method of dark-field illumination, as employed by the two Jena professors for rendering visible ultramicroscopic particles. By means of this apparatus, the Jena professors have seemingly accomplished what the great Helmholtz did not conceive as possible. This physicist declared the limit of microscopic perception to be 0.0001 millimetre (0.000003937 inch), while it is estimated that this limit has been extended to from 0.000004 to 0.000007 millimetre. That such an achievement promises great things in scientific investigation is readily seen."

**Western Reserve Medical School.**—Dr. J. J. McLeod of the University of Edinburgh, was elected professor of physiology, and Dr. H. C. Kenyon, was promoted to a professorship in dental technics.

**Opium Bill Halted by Secretary Root.**—Secretary Root has decided that nothing further shall be done regarding the proposed opium act of the Philippine Commission until it has had the most careful consideration in Washington. The Commission has been so informed by cable, and the opium bill, which had passed its second reading, will remain in its present status until the Secretary of War reaches a conclusion.

**Asylum for Lepers.**—In Burmah one grows callous at the several and ghastly sights, as one sees leprosy in all its worst forms stalking rampant through the streets and thoroughfares, says a writer in *The Graphic.* Ascending the steps of a pagoda you rub shoulders with the victims, in the markets, on the streets you jostle against them, and yet you do not seem to feel the repugnance a stranger not used to such sights would feel. Even those, with long experience of Burmah, find much that is new and interesting in the Golden City, once the Citadel of the Lord of the White Elephant and the Golden Throne. But there is one sight, one institution, one enduring memorial, for which we are not indebted to the past. The "Manaw Yaman," the Royal Garden, where St. John's Leper Asylum is situated, is the home of many miserable creatures to whom even parental doors are closed; it is the home of the afflicted and the despised, the home of hideous sights and repulsive objects. Almost all the countries of Europe are allied in the work of mercy carried on at this institution; priests and nursing sisters, who have given up home and friends to minister to these most miserable of creatures, are joined in their labor of love. Inch by inch the asylum has grown, until now it has attained the position of being ranked as one of the most noble institutions not only in Burmah, but in the whole world. It had a very humble beginning, as most things in this world have. It was shortly after the annexation of Upper Burmah—or, to be more accurate, in 1888—that the late Bishop Simon addressed the authorities on the subject of lepers, but it was not till 1891 that the Rev. Father Wehinger, following the example of the immortal Father Damien, of Molokai, was able to found the St. John's Leper Asylum on a grant of six acres of land just outside Mandalay. The beginning was necessarily on a very small scale, and when it is taken into consideration that the number of lepers in Burmah at that time was variously estimated at anything between 18,000 and 30,000, it is not at all surprising to learn that all available space was immediately filled up, and hundreds of other unfortunates had perforce to be turned away. From the appalling figures quoted above of those affected, it is very evident that asylums such as the St. John's were not only very useful, but absolutely necessary, as being the only means of regenerating a nation almost entirely imbued with the leprosy virus, and so slowly but certainly stamping out the terrible disease. But, under the circumstances, nothing could be done, new wards had to be built, and to do this money was needed. Sufficient not being available locally, the idea struck Father Wehinger to try fresh fields and pastures new, so, in 1895, with the permission of his ecclesiastical superior, he undertook a voyage to Europe on a begging tour. The reception he met with in the several countries he visited was, to say the least, enthusiastic. In England a committee of distinguished personages was formed and every assistance given him. After an absence of three years Father Wehinger returned to Burmah, and at once set in hand the erection of the new wards, with the aid of M. Blin, architect and engineer.

**Obituary.**—Dr. O. Everts, superintendent of the Cincinnati, Ohio, sanitarium, since 1880, died last Monday, aged seventy-six years. He had written extensively concerning the use of stimulants and treatment of the insane. He was Register of the United States Land Office from 1859 to 1861.

Dr. Nathaniel P. Washburn, a well-known physician, formerly of Stamford, Conn., died on Monday in San Antonio, Texas.

## CORRESPONDENCE.

### TRANSACTIONS OF FOREIGN SOCIETIES.

#### British.

DIFFERENTIATION OF THE CONTINUED AND REMITTENT FEVERS OF THE TROPICS BY BLOOD CHANGES—SOME POINTS IN THE PATHOLOGY AND TREATMENT OF ENLARGED PROSTATE—HAIR-BALL REMOVED FROM THE STOMACH—TWO CASES OF TUBERCULOUS CHOROIDITIS—ADRENALIN IN GLAUCOMA—LIPEMIA IN DIABETES.

Capt. LEONARD ROGERS, at the Royal Medical and Chirurgical Society, May 12, 1903, read a paper on the Differentiation of the Continued and Remittent Fevers of the Tropics by the Blood Changes. The paper dealt with a series of some 200 cases of continued and remittent fevers worked out during the last two years in the European and native hospitals in Calcutta, with both the serum tests and the leucocyte count. The question was discussed as to whether there were any heretofore undifferentiated fevers to be met with, such as were described by Dr. Crombie in his address before the Indian Medical Congress in 1894, which had not been previously put to the test of modern methods of diagnosis. In all the cases the differential leucocyte count had been carried out, as Capt. Rogers had shown that by its means very valuable aid could be obtained in differentiating typhoid from malarial remittent fevers, this being of the greatest value in this research on account of the impossibility of finding parasites in most cases of malarial fevers which had been given quinine before they came under observation, as was nearly always the case with European patients. Fifty consecutive cases of typhoid fever were first dealt with; a short clinical account based on the analysis of the notes and tables of the results of the serum test and the leucocyte counts were given. The latter bore out Capt. Rogers' earlier results in a different and smaller series of cases with regard to the very frequent presence of an increase in the percentage of the lymphocytes in typhoid fever without any increase of the large mononuclear white corpuscles, except during the stage of convalescence or in cases complicated by malaria. The frequency of typhoid fever in natives, as shown by the serum test, was then briefly dealt with, and this confirmed Capt. Rogers' former experience on this subject—a point of some importance in view of Dr. Crombie's statements that the disease was very rare in natives of India. In a similar way a series of malarial remittent fevers were dealt with, and the great value of the large mononuclear increase in the diagnosis of this class of fevers was illustrated. Further certain clinical features of considerable diagnostic importance based on the records of both series of cases were pointed out, which enabled many cases to be accurately diagnosed without the use of the blood tests. Next, the question of the presence of new fevers, in addition to typhoid fever and malaria, were discussed in relation to Dr. Crombie's classification based on clinical experience, and a chart was given of the cases treated in the European General Hospital during the last three years, showing the seasonal distribution of the different forms of fever, which supported the conclusion of Capt. Rogers that there were no new fevers of common occurrence, and that the so-called "simple continued fevers" were malarial in nature, while that described by Dr. Crombie under the term "non-malarial remittent," and seen by him nearly exclusively in natives, was nothing but typhoid fever. Lastly, some recent observations on the so-called "low fever" were recorded, and the nature of this affection was discussed. A series of charts illustrating cases of special interest were shown.

Dr. PATRICK MANSON said that he differed entirely from the conclusions arrived at by Capt. Rogers, which seemed to him to be based on quite inadequate grounds. Dr. Manson pointed out that an increase of the large mononuclear leucocytes occurred not only in malaria, but was present also in trypanosomiasis, and that the diagnosis of malaria could not rest on that point alone. Capt. Rogers' experience was founded on observations of fevers seen in Calcutta, and could not be applied to tropical fevers generally, since the type of African fevers differed greatly from the fevers occurring in India. He was certain that there were many varieties of continued fever which were neither malarial nor typhoid. H thought that quinine given by the mouth and absorbed was as effectual as quinine given hypodermically. He considered that Capt. Rogers' conclusions were premature and not gathered from a sufficiently large field to justify the statements made.

W. BRUCE CLARKE, at the Medical Society of London, May 11, read a paper entitled: "Some Points in the Pathology and Treatment of Enlarged Prostate." He contended that prostatic obstruction was the result of several pathological conditions, and not of one. After quoting various authorities on this point, he described three principal varieties of obstruction (1) adenoma, (2) fibrous prostate due to sclerosis of gland tissue, and (3) varicosity of the veins of the prostatic urethra and trigone. Each of these demanded different treatment. The adenoma must be shelled out, while for the fibrous prostate, which was very difficult to remove, it was quite sufficient to remove one-half of the gland. This plan of treatment had been very successful in his hands. In the vascular prostate the cause of the obstruction was the blocking of the urethral orifice by the prolapse of the mucous membrane of the trigone, which was loosened by the subjacent varicose vessels. A method of cauterization similar to that which was practiced in prolapse of the rectum produced satisfactory results. Thirty-three cases were then related, three of which ended fatally, giving a mortality of 9 per cent.

C. A. MORTON, at the Clinical Society of London, May 8, read a paper on a case of hair-ball removed from the stomach. The patient, a young woman, aged eighteen years, had a large, hard and very freely movable and resonant abdominal swelling, which had been noticed for some months. The chief symptoms had been pain and vomiting. The latter occurred mostly after food, but often in the night. No exact diagnosis was possible, but the free mobility and resonance suggested an omental mass of tubercle or new growth. The hair-ball weighed 1 pound 12 ounces, and measured 6 inches across and was 2½ inches thick. It was removed through a four-inch incision in the stomach and the patient made a good recovery. After an operation a history of eating hair and cotton was obtained. Reference was made to other published cases in which hair-balls had simulated omental growths or fecal masses in the colon or cystic disease of the spleen, and attention was called to the free mobility of abdominal swellings due to hair-balls in the stomach.

At a meeting of the Ophthalmological Society, held May 8, W. H. H. **Jessop** described two cases of tuberculous choroiditis, one associated with conjunctival tubercle. The first case, that of a girl, aged nine years, was seen on Oct. 29, 1901, when complaint was made of a burning sensation in the right eye, associated with periodical attacks of inflammation and prominence of the lower lid. Later there developed a smooth, round, non-fluctuating swelling in the outer part of the conjunctiva which nearly reached the limbus of the cornea, with enlargement of glands in the neck. In the right eye tension was =1 and vision was 5/60. There were two areas of detachment of the retina corresponding with two masses obscuring the disc. The external growth was incised and proved to be tuberculous by inoculation experiments, characteristic bacilli being obtained. When seen again on Jan. 30, 1902, vision was 6/18; the masses in the fundus had practically disappeared, leaving patches resembling albuminuric retinitis, without either pigment, new vessels or vitreous opacities. The second case was that of a woman, aged twenty-three years, who complained of misty vision and of a black spot in the field; the vision was 6/18. A cyst in the breast was found to contain tubercle bacilli, and there was a strong family history of tuberculosis. While under observation masses in the choroid, similar to those described in Case I, were seen to spread from the center toward the periphery of the fundus, leaving but little trace behind them, and now, after three years and four months, the patient had recovered with good vision. Reference was made to 42 cases collected and described by Mr. George Carpenter and Mr. Sidney Stephenson.

A. F. **MacCallan**, at the Ophthalmological Society, May 8, 1903, reported five cases of glaucoma in which adrenalin caused an increase of tension. The subject was of interest in connection with the extended use of this drug in ophthalmic operations.

Sir T. S. **Fraser**, at the Edinburgh Medico-Chirurgical Society, May 6, communicated a paper on lipemia in diabetes mellitus. He stated that he had brought the case before the society on account of the interest and rarity of the disease, and because of the complete demonstration that was obtained post-mortem of the existence of a large quantity of fat in the blood, as well as of its presence during the life of the patient. The case was that of a youth, aged seventeen years, who was admitted to the Edinburgh Royal Infirmary, May, 1902, suffering from the ordinary symptoms of diabetes mellitus. The patient had been in comfortable circumstances, was well fed, with no alcoholic tendency, and with a good family history. His work did not unduly expose him, as he usually worked under an open shed. He had enjoyed good health until twelve weeks previous to his admission, when he began to complain of great thirst, polyuria and loss of weight. He was then seen by Dr. J. MacDonald of Carlisle, who put him on a strict diet, together with morphine, and under this treatment his condition improved somewhat. On admission the patient exhibited a fair amount of muscularity; his temperature was subnormal and remained so during the whole course of his illness. His breath had the acetone odor; the appetite was not voracious; the bowels were regular and occasionally moved twice in a day; the motions were well formed and of a good color. There was no tenderness over the abdomen or pancreas, and the liver and spleen were of normal size. The respiratory and circulatory systems were healthy, the pulse was slow and of low tension, there was no evidence of neuritis, and the fundus oculi was normal. As regards the urine, glucose, acetone and diacetic acid were present. On admission he was placed on ordinary diet for some days, from May 19 to June 3. On June 4 diabetic diet was commenced, and on June 20, 20 grains of phosphate of sodium were given twice daily, and this really constituted the whole treatment. The body-weight remained fairly constant throughout, there being only a loss of a few pounds. Under dietetic treatment there was a decided reduction in the amount of urine and sugar excreted, and this was further reduced by the phosphate of sodium. The patient began to feel much better, and spoke of going home at the end of June. The acetone smell in the breath continued, however. A faint albuminous cloud appeared later in the urine and on July 5 this became more pronounced and hyaline and granular casts were found to be present. Soon after admission the patient drank about 19 pints of liquid daily and excreted 351 ounces of urine, 10,000 grains of glucose and 975 grains of urea. Under dietetic treatment he drank about 12 pints daily and excreted 245 ounces of urine, 6,847 grains of glucose and urea in about the former amount. When subjected to quantitative analysis the fat present in the blood amounted to 16.5 per cent., as contrasted with 0.2 to 0.5 per cent. in healthy blood. In ordinary cases of diabetes mellitus the proportion of fat in the blood was almost similar to that found in health. In a former case of diabetic lipemia, which was described in 1882, and in which had determined during life the presence of a great mass of fat in the blood, the fat was present in the amount of 12.6 per cent. In other recorded cases it had varied from 1.3 to 11.7 per cent. In the pleural effusion in the case now described the fat was in even larger quantity than in the blood, as it amounted to 20 per cent.

Lipemia must be regarded as an accidental circumstance in the course of diabetic coma. In all probability the diabetic coma was itself due to the presence of acid bodies in the blood, being really an acid intoxication in which oxybutyric acid was the most potent factor. A coma indistinguishable from diabetic coma could be induced in animals by injecting this acid into their bodies, or by a reduction in the alkalinity of their blood. From 100 to 200 grams of this acid could be recovered from the body of a person who had died from diabetic coma. The alkalinity of the blood was reduced in the case just described before the onset of the symptoms. As regards the origin of the fat, it was not a manifestation of a general fatty degeneration. Moderate fatty change was present only in the liver, kidney and myocardium. Yet fat was abundantly present throughout the whole vascular system. It could not, therefore, have been derived from the blood or tissues. Coincidently with the appearance of coma there was a marked reduction in the excretion of sugar. The urine obtained post-mortem contained 2.5 grains per ounce. The abrupt fall in the sugar could not have depended on any alteration in the kidney. On July 5 and 6 the sugar had begun to undergo extreme chemical changes leading to a greatly enhanced production of butyric acid, as well as to an enormous production of fat. The blood post-mortem contained no sugar (neither did that of the case described in 1882). There was strong evidence that in diabetes the sugar in the blood might abruptly undergo chemical changes into acids and occasionally into fat also. As regards treatment, both acetonemia and lipemia might be recovered from. If the fatty transformation as well as the acidonemia was due to an acidosis, then alkaline treatment was indicated. In this case, perhaps, an insufficient amount was injected, or else too much fat and acid had been elaborated, so that no treatment could have sufficed. Dr. Fraser indicated that this alkaline treatment should be given in large amounts, and on the earliest sign of oxybutyric acid and fat. The presence of the first could be gathered from an examination of the urine and of the second by the blood. The urine and blood should, he thought, be examined in the diabetic cases every one or two weeks for oxybutyric acid and excess of fat respectively. A young diabetic patient might at any moment pass unexpectedly into a condition of the most serious danger.

## REASONS WHY THE MEDICAL PROFESSION SHOULD ENDORSE THE ACT OF GOVERNOR PENNYPACKER.

*To the Editor of the* MEDICAL NEWS:

DEAR SIR: The recent act of the Governor of Pennsylvania, in approving the Press Libel Bill, should be most heartily and strenuously endorsed by the medical profession—perhaps more so by us than the layman—because the connection between newspaper suggestion of crime and its results is more apparent from day to day to those of us who are brought into contact with its progeny in the wards of hospitals, asylums and prisons; and in which moral degeneracy, or the acts of these degenerates are so clearly traceable to suggestion from the publication and illustrations of criminal acts in all of their horrible detail

Four years ago I had the honor to present to the profession an article on this subject in the *University Magazine,* and to which I refer you. The thought I wish to bring most prominently before you is that it is our duty to stand with Governor Pennypacker in this courageous act, and take advantage of the greatest opportunity we will ever have to appeal to the people and to the makers of the law in every State to stop this bad feature of journalism, this license which we allow no other class or individual.

Educate your community, explain to your people, enlist the clergy in this work. Take some intelligent man, of position and power, in his city or town—ask him into your office, take a few moments, and show him the close connection between the suggestion and the committal of crime. Take your daily paper, or a journal from a neighboring city, and show him that one-third or one-half of its columns are filled with accounts and illustrations of disgusting and immoral acts of people whose appetities they are catering to, and for whose education they are responsible. Remind him that this immoral sheet comes into his home every morning for his children to feed upon—and whose teachings may some day show fruit in their criminal acts. Then read him the slurs, the innuendos, the accusations—based upon nothing but rumor, or due perhaps to personal spite or prejudice—read him these attacks upon our officials, from the President down to the lowest. Tell him that this is freedom of speech and of the press, if you will, but at the same time tell him that it led to the assassination of two Presidents—that he is teaching his children day by day that these offices—not officials—which represent and stand for our dignity, and the law and order, may be treated with irreverence, disrespect; and damned by anybody.

Then show him the statistics of immigration where over a million of foreign trained and foreign born—some of whom are but yesterday removed from the galleys, and all of whom have been compelled to show a respect and obedience to the government under which they have lived—are coming to a country where perhaps the first sentence they may read or hear spoken in the language and the land of their adoption may be an epithet or an accusation against a representative of our judiciary.

These are people we are absorbing and molding into American citizens; and whose children will sit side by side with ours in the public schools. Then, if he be a Southern man, talk to him of those savage and devilish brutes with whom we have to deal in our own country; tell him that up until twenty years ago this crime was unheard of. Recall to him the nature and temperament of the negro, his receptiveness for good or evil suggestion, how it is his nature to imitate. That his present status in the world is but a half century removed from slavery. Of his unfitness, as is the foreigner's, to jump at once to our level after centuries of subjugation. How he is antagonistic to a degree that makes any evil suggestion especially dangerous.

Tell him where they get these evil suggestions, how they read and are read to daily, accounts of these horrible crimes; and how these crimes have only become epidemic since the day of modern journalism, and are undoubtedly the results of newspaper education.

I have never believed that these crimes were from lust or desire but are instigated by a hate and antagonism for the whites, which is aroused and instilled by the criminal and cowardly negro who reads and interprets these newspaper accounts to his ignorant brother, and cunningly suggests to him the horrible deed. In proof of this we have the fact staring us in the face that the inevitable punishment does not check, but, in my opinion, actually increases the number of these crimes by being constantly brought to their attention.

The negro rarely betrays a trust, if he feels that you trust him, and has proven this conclusively, as any old Confederate soldier will testify. On the contrary, treat him with suspicion, and constantly bring the crime, peculiar to his people, before him and you not only debase him but you make him dangerous—and this is equally true of any man of any race. If you will eliminate this character of news from the newspaper I sincerely believe that within a few years this crime will be as rare as it was in antebellum days.

The legislature of Pennsylvania, in prohibiting the publication of certain matter which tends to degrade American citizenship and destroy reverence and respect for the dignity of office and the officials who represent it, should encourage and spur the better and more thoughtful element to ask and fight for some law regulating and prohibiting the publication of accounts and details of crime; and the legitimate and decent press should support and encourage such an effort for their own salvation, if upon no other grounds, because if the present system of newspaper education goes on the great majority of readers will have acquired a taste for this kind of news matter, and they will have to cater to them or else—well, they know the alternative.

It is also imperative that the town, county, and smaller papers take some action, as these great journals are going everywhere and taking from them their legitimate and logical custom, and educating those around them to a taste for reading matter that is not within their power to supply and which is not their mission, but nevertheless hurtful and fatal to their existence.

I have talked with a great many of the editors of these smaller papers and written to a number of State representatives throughout the country, suggesting and asking their opinion of a law which could be passed prohibiting the sale or offering for sale journals and newspapers whose columns contained accounts and illustrations of crimes and reading matter unfit to come into the hands of children, and whose influences were harmful—in fact any newspaper that is known as a yellow journal; and how such a law would not only be for the best moral interest of the people but would take this class of journals out of competition with the smaller State papers. This suggestion, I think, we will soon be able to bring in the form of a bill before one of our State legislatures, and I would suggest that you work for such a bill in your own State. While this will not forbid them the mails, yet it will stop their sales in all public places, and unless they cut out certain matter we will be entirely rid of them.

This bill will have the support of the town and county papers throughout the country, and with their support and endorsement the U. S. Congress will not hesitate to forbid them the use of the mails, and the day that Congress closes the mails against these crime disseminators that day we will have avenged the assassination of William McKinley.

STANLEY WARREN, M.D.

Hoxie Bldg., Fort Worth, Texas.

## SPECIAL ARTICLE.

### BYWAYS OF MEDICAL LITERATURE. XIV.

#### A MEDICAL OFFICER IN ANCIENT GREECE.

AN ancient inscription more than 2,000 years old has recently been discovered at Amphissa in Greece which is particularly interesting to all members of the medical profession. It is a decree of thanks to a doctor, honoring him for his good works, and, being practically complete, is probably one of the oldest documents containing an eulogium of a medical man in existence. We give the text complete as it speaks for itself, adding only a few words of commentary to further elucidate its meaning. The text itself and most of the supplementary remarks are derived from an essay upon the inscription by M. Wilhelm Vollgraff.*

"To propitious fortune.

The Archons and the city of the Amphissians to the Archons and to the city of the Scarphians greeting. We have forwarded to your town a copy of the decree engrossed by our city in honor of the doctor Menophantos, son of Artemidorus, a Macedonian of Hyrcania, as Menophantos has requested us to do.

"In the month of Amon......day. Proposition of the monarchs. Take notice that Menophantos, son of Artemidorus, Macedonian of Hyrcania, doctor, having been invited by our city, has established himself therein and has on his sole account accepted the responsibility of the medical duties. Behold when most serious diseases manifested themselves he ably cared for us and next to the gods it is to him, thanks to his exertions and personal energy, that our attacked citizens were rescued.

Take notice, he has been attested as irreproachable for having lavished his cares upon all without distinction, with constant honesty and perfect equality, and for having watched over all things (or cases) with benevolence.

"Take notice that he has conducted himself during the period of his sojourn among us with modesty and wisdom and has manifested a deportment of perfect dignity worthy of the city and his profession. Also and moreover, notwithstanding (his advanced) age and (accidents) which have befallen him, he has acted in departing from our city curing all the assembled sick and giving public consultations? (this rendering is doubtful). We grant Menophantos the Proxenia and give him permission......We present to him......because of his great attention and for his great benevolence. In order that there shall exist a visible monument of this Proxenia accorded to Menophantos we have forwarded a copy of this decree to the city of the Scarphians, and we make the following proclamation. The Amphissians have presented to Menophantos, son of Artemidorus, to him and to his descendants, the Proxenia, the right to acquire property, the rights of pasturage, protection in war time as in times of peace, and all other privileges which the laws grant equally to the other proxenias."

It is not necessary here to set forth M. Vollgraff's reasons for dating the inscription in the second century B.C. but they are sufficient. Scarphia, the city which for some reason the Amphissians and Menophantos desired should also exhibit a copy of this decree in honor of their medical resident, was close to Thermopylæ. It was but a short distance from Amphissa, which latter was close to Delphi. The medical man was evidently a descendant of some Macedonian who was a colonist of Hyrcania in Lydia, and who possibly emigrated there under Alexander or his successors; but as we are told that one of the Selucid princes settled Macedonians in the Hyrcanian plain, which was in the Hermus Valley in the neighborhood of Magnesia, his ancestors may be considered as coming from Macedonia at that time. The name of Menophantos is not a Macedonian one but evidently commences with the title of the deity Men who was a god of healing. Many Greek medical men assumed names formed of compounds with the name Men, such as Menodotus, Menodorus and Menophilos. Moreover, close to Hyrcania, from which Menophantos came, Strabo tells us there was a temple of the god Men and at this sanctuary there was a school of medicine. It is quite possible this school existed in the year of Menophantos, and that he studied there. There are some twenty honorary decrees, or notices, of medical men in the various collections of ancient inscriptions, showing that the members of the profession were in many cases worthy citizens and virtuous and kindly men and, further, that their efforts for the amelioration of the bodily ailments of their fellow creatures were fully appreciated. Two of these texts may be found in Newton's "Greek Inscriptions in the British Museum," Vol. II, pp. 143 and 258, and others in Messrs. Paton and Hick's "Inscriptions of Cos," Nos. 5 and 344.

#### MADNESS IN LITERATURE.

A recent critical study by Henderson, in the New York *Sun*, is of interest. He writes:

"The reason why men and women of all ages, all climes, watch with consuming interest the terrible drama of noble souls battling with madness—they are to be found in all literatures—we leave to the psychologists. Possibly buried in the abysmal depths of our subconsciousness—the true arbiter of our destinies—there lurks a terror that the hard-won victory of mind over matter, of the intellect over the powers of brute darkness, is an unstable one, that our primeval ancestors' passions and madness still hover in the latent folds of our consciousness, to be released by the pressure of circumstance, and may transform us into raging animals again. Be this as it may, crime and madness are the two big natural themes that the masters of art juggle with—Shakespeare the most wonderfully of all.

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* Bulletin de Correspondance Hellenique, 1901, pp. 234–240.

"There may be recommended a sound treatise by Enrico Ferri, professor of the University of Rome, a Roman Deputy and now at the 'Universite Nouvelle de Bruxelles.' It is entitled 'Les Criminels dans l'Art et la Littérature,' and it is more thorough and more subtle than any of the decorative theories of Lombroso or Nordau. After an enumeration of the mad folk of the classic writers he considers at length the three great types of criminal madness in Shakespeare; *Macbeth*, criminal born; *Hamlet*, criminal-mad; *Othello*, criminal through passion. Naturally, the words criminal and mad do not connote the popular meanings ascribed to them. These superb, disordered minds are not to be confused with the inmates of lunatic asylums, any more than the brilliant, critical writings of his youth are to be confounded with Nietzsche's later half-crazy lucubrations.

"Altogether the subject is an interesting one, if a deflection from the main line of dramatic criticism. Turgenev objected to the excessive preoccupation with themes of this sort, accusing his great contemporary, Dostoïewsky, of making too many 'psychological moleruns' in his novels. The same anxious inquirer alluded to at the beginning of these notes also asked us who and what was Dostoïewsky. To answer this question is not within our allotted province; reference was made to him only in connection with a dramatization of his extraordinary novel, 'Crime and Punishment,' undertaken for Richard Mansfield some years ago by Charles Henry Meltzer. Called 'Rodion the Student,' it was enacted at the Garrick Theatre, and few of us are likely to forget Mr. Mansfield's fourth act, with its haunting horror.

"This mime has an especial predilection for the delineation of morbid and diseased souls. Whether he exhibits the dual personality of *Jekyll* and *Hyde*—Stevenson was evidently cognizant of the phenomena called 'double, or alternating, personality'—or the mad sensuality of the *Baron Chevrial* or the vaporings of the decadent *Nero*, Mr. Mansfield always sounds clearly the note of mania, not a pleasant one, evocative as it is of the shudder. And in the works of Shakespeare there is still a mine for the curious or the earnest student of the pathologic in dramatic literature."

### EPILEPSY IN LITERATURE.

In Act I, scene II, of "Julius Cæsar" *Casca* thus relates to *Brutus* and *Cassius* the details of *Cæsar's* attack: "He fell down in the market place and foamed at mouth, and was speechless." To which *Brutus* laconically replies: "'Tis very like; he hath the falling sickness." "Now, this same falling sickness, also called the sacred sickness, because of its attacking inspired people, sybils, men of genius, soothsayers, prophets, is in our modern speech epilepsy. *Cæsar* was an epileptic; so were Napoleon, Molière, Petrarch, Peter the Great, Handel, Mahomet, Swift, Richelieu, Charles V., Flaubert, Dostoïewsky and St. Paul. The kinship of genius to disease—say motory epilepsy—has been denied, but it would seem that the alienists have made out a good case. Shakespeare, of all writers, has been the most successful in setting before us types of genius troubled with mental maladies. Is *Hamlet* quite sane? Is he not afflicted by *folie du doute?* And has not the great poet-alienist pictured with matchless skill every fine shade of his mania, from halting irresolution, wherein he even doubts the existence of the apparition, to homicidal madness? And *Hamlet's* sovereign intelligence is never quite overthrown, for if it were his would be a case for the madhouse, not for psychological dissection. Again, is it not the analysis of the mental states of the two *Macbeths* that makes the tragedy sublime? And what of that crowning study of royal imagination wrecked, of the kingly *Lear*, with his crazy jester and faithful follower, simulating folly? These may be supreme studies in morbid pathology, but are they not Shakespeare's?

### MANSFIELD AND HIS ART.

Henderson writes in the *Sun:* "Epilepsy is, as Edgar Saltus wittily says, 'the only disease that ever founded a religion;' and this holds good from the visionary Buddha to yesterday's newly hatched healer of woes, physical and spiritual. It is masked or intermittent epilepsy, *hysteria muscularis* or its pyschic equivalent, that often accounts for the creative powers of a genius and the vagaries of our own Edgar Allen Poe. Even that sanest man of genius, Goethe, confessed to Eckermann that in the moments of his creative energy there was something 'incommensurable,' something without himself that played upon the keyboard of his captive spirit. He quoted Socrates and his *Dæmon* as an illustration of his own case.

"Is it then to be wondered at after witnessing Mr. Mansfield's *Brutus* that we recognized in his impersonation many traits of an intellect unhinged? The noblest Roman of them all is neither a swashbuckler nor yet a frozen symbol of classicism. He has affections. He has passions. He lives and moves; but the sickly *aura* of the monomaniac envelops his personality. He stabs *Cæsar* for an idea; the idea of liberty. He is the first Anarch—for, as Shaw neatly points out, Shakespeare created this type of the Girondin nearly two centuries before it stalked ominously across the map of Europe. On the stage this sublimated patriotism is magnificent; yet we must not lose sight of its beginnings; and Shakespeare takes care that we do not. From the first seeds of revolt sown by the shallow, ambitious *Cassius*, to the dagger thrust in the Capitol, the mental operations of *Brutus* are exposed in a masterly manner. To carry within him the germs of lunacy a man need not rave, need not rend passion to rags. The mania of melancholy, the madness of one who hears interior voices telling him to free his country, are not expressed violently. Such as are thus afflicted are reserved, cautious, move as in hypnotic slumber, and after the tragic act retire to their gloomy dreams, satisfied, spent. *Brutus* practically confesses that his hour has struck, that life henceforward is a blank interim.

"If Mr. Mansfield did not model his performance on this hypothesis—and he openly declares that he did not—then between the intention of his own preconceived idea and its execution a hiatus has occurred. He told Mr. J. I. C. Clarke in a recent interview that his notion was the classic one, *et cetera.* It does not thus appear before the footlights, and this again demonstrates that an artist is not always his own best critic.

"Mr. Mansfield declares that a criticism is, after all, only one man's opinion; to which might be retorted that an actor's interpretation is, in the last analysis, only one man's conception of a rôle. All this is wildly misleading. Criticism is ever personal; it does not pretend to voice popular opinion—heaven help it if it did! And it need not agree with contemporary criticism to return its value. The best of criticism is subjective, is impressionistic. It is never final; there never was and never will be an ultimate tribunal of criticism in this fleeting world of change, where everything from ethics to politics—and what a chasm divides them!—is relative, where the one thing permanent is impermanency. We may put forth our view of the Mansfieldian *Brutus;* of course, he will not agree with us, for to few artists is given the divine privilege of seeing their performance objectively.

And so the merry war begun æons before Aristotle will continue till Gabriel blows his final trump—and then the Henderson of that remote period will shake off his cerements and cry aloud—the last criticism by the last man—'Thou hast sagged in thy intonation, O son of the Apocalypse!' To criticise is human."

### ENCOURAGING THE SOCIAL EVIL.

It is very doubtful if physicians generally realize certain of the political methods which are employed to keep up the so-called social evil, or, at least, to prevent the enforcement of laws which would limit it to a considerable extent. As physicians are very much interested in the physical evils which result, it is only logically reasonable that they should recognize the political conditions that encourage the moral evils at the basis of so much physical evil. We clip from one of the prominent magazines of the country (*McClure's* for May) an excerpt that shows how such affairs were managed in one city, not with any idea of condemning Pittsburg methods specifically, but of showing how certain tolerated "graft" practises that bring about, as Doctors well know, the inevitable spread of serious disease as their consequence, are encouraged and fostered under a venal municipal administration. Even though none of the money obtained may go directly into the treasury of the political party through whose complaisance the evils are allowed to continue, it is evident that the responsibility for such abuses falls directly upon party leaders and too subservient followers.

Here is the story of one political régime:

"Disorderly houses are managed by ward syndicates. Permission is had from the syndicate real estate agent, who alone can rent them. The syndicate hires the houses from the owners at say, $35 a month, and he lets it to a woman at from $35 to $50 a week. For furniture the tenant must go to the 'official furniture man,' who delivers $1,000 worth of 'fixings' for a note for $3,000, on which high interest must be paid. For beer the tenant must go to the 'official bottler,' and pay $2 for a one-dollar case of beer; for wines and liquors to the 'official liquor commissioner,' who charges $10 for five dollars' worth; for clothes to the 'official wrapper maker.' These women may not buy shoes, hats, jewelry, or any other luxury or necessity except from the official concessionaries, and then only at the official monopoly prices. If the victims have anything left, a police or some other city official is said to call and get it (there are rich ex-police officials in Pittsburg). But this is blackmail and outside the system, which is well understood in the community. Many men, in various walks of life, told me separately the names of the official bottlers, jewelers, and furnishers; they are notorious, but they are safe. They do nothing illegal. Oppressive, wretched, what you please, the Pittsburg system is safe.

"That was the key-note of the Flinn-Magee plan, but this vice graft was not their business. They are credited with the suppression of disorder and decent superficial regulations of vice, which is a characteristic of Pittsburg. I know it is said that under the Philadelphia and Pittsburg plans, which are much alike, 'all graft and all patronage go across one table,' but if any 'dirty money' reached the Pittsburg bosses it was in the form of contributions to the party fund, and came from the vice dealers only as it did from other business men."

Doctors must take cognizance of such methods. They need no comment. There will be no lessening of the venereal danger; there can be no serious prophylaxis of venereal diseases while such things are permitted to go on.

## SOCIETY PROCEEDINGS.

### NORTHWEST MEDICAL SOCIETY OF PHILADELPHIA.

*Regular Monthly Meeting, held Tuesday, April 7, 1903.*

President pro tem. Wendell Reber, M.D., in the Chair.

**Effect of Erysipelas upon Atrophic Rhinitis.**—Dr. Lewis S. Somers read a paper on this subject. He called attention to the fact that atrophic rhinitis accompanied by ozena, and not dependent upon disease of the accessory sinuses presented a pathology, which is not susceptible to complete structural restoration, and requires constant attention to the nasal passages and the removal of the dried secretions, the odor being very offensive and causing the paitent to more or less isolate himself from society. Reference was made to the antagonism which exists between certain diseases, the presence of one for the time at least excluding another or creating an immunity in the individual for that disease, or in certain instances, the acquiring of one disease may eradicate a preexisting affection, erysipelas, being the disease which has been most studied in this connection, the products of the organism of which have been used to some extent to combat various malignant conditions. The case reported was that of a man aged thirty-eight years, who had been troubled with dryness of the nasal chambers and pharynx as long as he could remember, and especially since the age of ten years; he gave no history of the diseases of childhood, was abstemious in his habits and presented no evidence of venereal disease. The family history was negative with the exception of the history of nasal catarrh in his mother and some members of her family. His chief complaint was the presence of an intensely fetid nasal odor; in addition to which the nose and nasopharynx would become blocked at least once a day, and especially in the morning on arising with large greenish crusts, which were removed with difficulty, frequently causing nausea and vomiting. Objectively the nasal interior was roomy and filled with greenish crusts, emitting the odor of ozena. On removal of the crusts the turbinals were pale, atrophic in great part, but the lower on both sides presented a few isolated spots or relatively normal tissue, the pharyngeal wall being plainly visible through both nasal chambers. The nasopharynx was covered with masses of partially dry and offensive mucus; the pharynx was red, dry and sclerotic, the case presenting the usual picture of atrophic rhinitis without involvement of the sinuses. The only treatment that seemed to give any relief was the cleaning of the nasal chambers several times daily; citric acid, oil of mustard, the tampon with iodide, etc., seeming to have very little effect. On April 18, 1902, he received a slight blow over the right eye, barely sufficient to break the skin, but within twenty-four hours erysipelas developed over the bruised area and rapidly involved the entire face and neck, with abscesses of the eyelids, suppuration of the lateral cervical glands and extending to the nasal and pharyngeal mucosa. The disease ran the usual course, and the patient was free from all symptoms by May 5, at which time a careful examination of the upper respiratory tract showed that the ozena had disappeared, the nasal mucosa was covered with a few crusts which were easily removed, while the necessity for the frequent removal of the inspissated secretions had entirely disappeared; the lower and middle turbinals on each side were shrunken but presented a more healthy appearance, and small areas of the mucous membrane more nearly approached a normal condition. No treatment was recommended except occasional cleansing and the use of alkaline solutions, and at the present time, nearly a year later, the nasal mucosa remains somewhat shrunken and atrophic in patches over the turbinals, but is elsewhere apparently normal, the healthy areas are increasing in size; the secretions are practically normal, and while there is occasional crusting, it produces no obstruction and no offensive odor. Reference was made to the cures reported by various authors of syphilis, local anthrax, lupus nodules and leprosy of the conjunctiva by an erysipelas infection, and Hassler has reported a case of epilepsy having from 40 to 70 attacks a month, in which the attacks entirely ceased after an attack of erysipelas. The work of Coley in the cure of various malignant growths by the injection of erysipelas serum was referred to, and it was thought to be more successful in sarcoma than carcinoma. He stated that a search of the literature had revealed but two cases of ozena cured by erysipelas, both of which were recorded by Francesco, the first being a case in a young woman in which the disease was of seven years' duration, and during that time had resisted all treatment; erysipelas incidentally developed and when this condition disappeared the ozena was gone. The second case also occurred in a young girl involving the left nostril, and after an attack of erysipelas there remained no trace of the ozena.

Dr. R. Valentine Levi, in discussing this paper, reported a case of atrophic rhinitis which had apparently been cured in the early stages by three successive attacks of erysipelas. The patient was a workman around the erection of a large department store, where he was exposed to considerable dust and contracted, what he thought, an acute coryza and for some time he did nothing for the condition, which continued to get worse and worse, inducing him to begin treatment. Various preparations to heal the ulcers and different alkaline solutions were employed, with but little effect, and the patient presented a typical picture of atrophic rhinitis, with the exceptions that the right side of the middle turbinate, instead of being smaller, was engorged. The rest of the nose was covered with greenish thick scales, and there was marked ozena. About five months after the coryza developed he was taken with a chill followed by a temperature of 103⅗° F., and as influenza was quite prevalent the physician suspected this condition. The following day, however, his temperature was 100⅗° F., the whole nose was red and a diagnosis of erysipelas was made, which continued for a week, his temperature at times rising as high as 105° F. At the end of this time the patient stated that the discharge from the nose was not as great as it had been, and was odorless, and examination revealed marked improvement of the ozena; he subsequently had two other attacks of erysipelas, at the end of which time a complete cure of the rhinitis was apparently effected. The speaker referred to a case of osteomyelitis of the femur, which was operated on three times, and the patient remained in bed six months, during which time the wound had not healed and continued to discharge a cheesy material; the patient then contracted erysipelas, and in about three weeks, upon his recovery from the latter condition, the wound was entirely well.

Dr. T. Turner Thomas stated that he had seen a number of cases of sarcoma treated by the injection of Coley's fluid, but so far had witnessed no good results, and felt that this remedy should only be used as a last resort. He also referred to the fact that very frequently, especially in tubercular disease, the disease would be practically dormant until mixed infection occurs, after which it would become quite active. A case was reported in which an operation had been performed for cervical adenitis, and a drainage tube four or five inches in length introduced. By mistake, in dressing the wound, a very strong solution of bichloride was employed, and in a couple of days this had produced a severe dermitis, which it took four or five weeks to heal, by which time the abscess cavity was closed. This result, he felt, was probably due to counter-irritation, which would probably explain the action of the erysipelas upon atrophic rhinitis and malignant growths.

Dr. Nathan G. Ward laid particular stress upon the obscure etiology of the condition, and referred to the cures claimed to have been secured by the French observers by use of electrolysis, *i.e.*, about 90 per cent., and while he did not think this could be accomplished, he did believe that electrolysis lessened the discharge and odor and rendered it more comfortable for the patient and his friends. Reference was made to the theory advanced by some that the erysipelas produced an increase in the leucocytes, and thus retarded the growth of the germ of disease, and the other that there was an antagonism between the streptococcus and the micro-organisms in the disease.

Dr. Howard S. Kinne referred to an epidemic of erysipelas which had come under his observation while a resident in a hospital, in which many of the patients suffering from carcinoma, etc., had contracted the disease with apparently no result, and he felt that Coley's serum should be employed only in inoperable cases.

Dr. Arthur P. Hitchens suggested that possibly the inflammation might increase the blood supply in the parts and thus help the condition. He referred to the theory on which Coley had worked, *i.e.*, that the antagonistic serums produced this effect, but did not believe that antagonistic serum played as important a rôle as the immune serum. The variation between the French and German views on this subject, the former claiming that there is but one immune serum and complement for all the various micro-organisms, and the latter claiming that there is a multiplicity of immune serums and complements.

Dr. Foster K. Collins stated that prior to 1900 he was subject to attacks of acute rhinitis, coryza and tonsillitis. About that time while in attendance upon a case of erysipelas, he accidentally infected his nose, which spread until the disease involved the whole face. Since that time he has been entirely free from the rhinitis and the attacks of tonsillitis and coryza have been very few and not so severe.

Dr. Lewis S. Somers, in closing, stated that while he did not recommend erysipelas as a cure for atrophic rhinitis, it seemed to have a therapeutic effect in this condition as well as in various malignant growths as is borne out by the observations of several German observers, reported in Nothnagel's article on erysipelas.

**Diagnostic Value of a Proctoscopic Examination in Proctitis with Some Remarks on That Affection.**—Dr. Herman A. Brav read this paper, in which he remarked that proctitis was the only disease which necessitated the use of the proctoscope in order to make a diagnosis, the majority of other rectal affections, being situated within about four inches of the anus, can be detected by digital examination. The scanty literature on the subject was commented on and the belief expressed that oftentimes the cases were overlooked and treated for diarrhea or some similar condition owing to the symptoms not being sufficiently marked to demand a rectal examination. He defined the condition as acute or chronic inflammation of the rectum characterized anatomically by a swollen edematous mucosa and marked congestion of the blood-vessels. The clinical symptoms are sense of weight and fulness in the rectum, frequent defecation, with small quantities of mucus and sometimes blood and pus, the most common causes being impacted feces, drastic purgatives, pathogenic bacteria, worms, foreign bodies, polyps, dysentery and gonorrhea, and it may be well advanced before any special symptoms are manifested. Two cases of this condition were reported, the first occurring in an unmarried woman, aged twenty-four years, who complained of chronic diarrhea and a dull pain in the hypogastric region during the act of defecation; for a year prior to this she had suffered from a sensation of weight and fulness in the rectum. Her personal and family history were good, with the exception of constipation. Two years previous to this attack she suffered from diarrhea with colicky pains, the latter symptoms disappearing under treatment, but the diarrhea persisted, stools numbering from eight to ten daily. A bimanual examination showed no displacement of the uterus, and digital examination of the rectum revealed no pathological condition beyond a somewhat contracted sphincter ani. Examination of the stools revealed the constant presence of mucus. Proctoscopic examination of the rectum showed the entire mucous membrane to be inflamed and edematous, covered with thick, tenacious mucus, and also a few ulcerated areas. She was treated by injection of a solution of chlorate of potassium (a dram to the pint of water) and a topical application of a two-per-cent. solution of nitrate of silver every other day, which in two weeks reduced the stools to five daily and in three weeks all symptoms subsided and the bowels were normal. The second case was a man, fifty-one years of age, huckster by occupation. Personal history was negative with the exception of constipation, and about one year before he came under the author's observation he had suffered from an attack of dysentery with marked pain on defecation, mucus, gaseous distention, which, although he was under treatment had constantly persisted. Digital examination revealed no rectal disorder, except a tight and hypertrophied sphincter; the examination of the stools showed the presence of mucopurulent material. Proctoscopic examination revealed an extremely congested condition of the mucous membrane, and near the sigmoid flexure were a number of white spots, which when clean with a pledget of cotton the applicator showed an ulcerated surface. The same treatment was carried out as with the previous case and with the same results.

In introducing the instrument it was recommended that the distal end of the proctoscope be anointed with vaseline and slipped through the sphincter while the patient is straining as much as possible, and after it is inserted about three inches, atmospheric inflation should be used to assist the progress. The importance of early diagnosis of these cases in order that proper treatment may be instituted was commented on, which should consist of local treatment of astringent and antiseptic injections, such as copper sulphate, alum, zinc sulphate, and chlorate of potassium; the application of silver nitrate to the ulcers for the purpose of healing them, and careful attention to the diet.

Dr. Lewis H. Adler, Jr., in discussing this paper, exhibited a Laws proctoscope and explained in detail the use thereof. He stated that the reason the rectal surgeon did not see more of these cases of proctitis was because the cases were not recognized, the physician not making the rectal examination and simply treating them as cases of diarrhea or some kindred condition. The instrument was felt to have considerable advantage over Kelly's tubes, as they are long and difficult to introduce. The instrument should always be warmed before introduction, and well lubricated. In the examination so soon as you meet with any obstruction the applicator should be removed, and by the aid of the electric light and atmospheric inflation you will be able to examine the entire surface of the rectum.

Dr. Foster K. Collins recommended that the applicator be withdrawn when the instrument had been introduced about one inch within the internal sphincter, and then by inflation the tube can be gradually worked upward.

Dr. T. Turner Thomas felt that general as well as local treatment should be given in these conditions in order to reach any inflammation that might be located higher up in the bowel. He also thought that unless the operator was familiar with the anatomy of the rectum, the use of the proctoscope would be attended with considerable danger.

Dr. Herman A. Brav, in closing the discussion, emphasized the fact that care should be used in using this instrument and again urged upon his hearers the value of early diagnosis in proctitis.

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## BOOK REVIEWS.

Manuel de Bacteriologie Clinique. Par M. Funck, Chef du Laboratoire de Bacteriologie de l'Université de Bruxelles, Directeur de l'Institut Provincial de Serotherapie, Avec sept planches colorieès hors texte. Deuxième Edition. Bruxelles. Henri Lamertin, Editeur. 20, Rue du Marché-au-Bois.

In this little handbook the leading facts of bacteriology are presented from the standpoint of the general practitioner and instructions are given to enable one not a trained laboratory worker to carry out such details of technic as are necessary to make a bacteriological diagnosis of the conditions likely to occur in general practice. A short sketch is given of microscopical and staining methods followed by a description of the manner of growing bacteria on different media, obtaining pure cultures, etc., and finally all the commoner organisms are described and their differential diagnostic points indicated. A number of fairly good colored plates illustrate this section which is followed by two excellent chapters on immunity and serotherapy which are admirable résumés of the modern views on these obscure subjects.

Lectures on the Use of Massage and Early Passive Movements in Recent Fractures and Other Common Surgical Injuries; the Treatment of Internal Derangements of the Knee-Joint and the Management of Stiff Joints. By Sir William H. Bennett, K.C.V.O., F.R.C.S., Senior Surgeon to St. George's Hospital, Member of the Court of Examiners, Royal College of Surgeons of England, etc. Second Edition. Longmans, Green & Co., New York and Bombay.

This set of lectures comprises an extended exposition of these very progressive views on the treatment of fractures and joint injuries which have attracted universal attention to their eminent originator. Their underlying principle is the intelligent use of passive motion and massage with the object of reducing the edema as soon as possible, stimulating the nutrition of the injured member and preventing atrophy of the adjoining muscles.

The first two lectures are concerned with fractures and contain detailed descriptions of the treatment of paradigm injuries with photographs of the author's dressings. The third lecture is on the management of stiff joints, together with the indications for and against forcible breaking up of the adhesions. The internal derangements of the knee, to which the last lecture is devoted, are particularly associated with the author's name, and both the operative and non-operative treatment are given *in extenso*. Altogether the collection is a most valuable one and contains much of interest both to general practitioner and specialist.

# INDEX

Abdominal auscultation in infancy, a note on, 1095
  contusions, 604
  rigidity, diagnostic value of, 558
Aberrant pancreas, 946
Abnormal constituents of the urine after epileptic seizures, 702
Abolition of Board of Coroners, 285
  of the coroner's office, 540
Abscess of the lung, 1050
  of the lung, two cases of, 1094
  of the spleen, 1001
Absorption of granular materials from the intestine, 1174
Academy of Medicine and doctor's club for Toronto, Can., 660
Accessory local treatment, 275
Accidents and complications following operations on the nose and throat, 335
  in football, 705
Acetone, some questions relating to, 263
Acetonemia, vomiting with, 601
Achylia gastrica and pernicious anemia, 793
Acid and alkaline reaction, 44
Acne vulgaris, etiology of, 1133
Acquired dislocation of the hip in a child, 74
  slow pulse, 280
Acromegaly, the calcium, phosphorus and nitrogen metabolism in, 1139
Actinomycosis in man, 647
Action of antipyrine, 70
  of carbon dioxide on muscle, 308
  of suprarenal extract, 606
  of the rays, 958
Acute appendicitis, 119
  articular rheumatism, very early diagnosis of, 72
  circumscribed edema, 214
  epiphysitis of the head of the femur, 999
  general staphylococcic infection through the puerperal breast, 1003
  hemorrhagic nephritis from potassium chlorate, 693
  infectious diseases, collapse in, 266
  lymphatic leucemia, 950
  lymphatic leucemia and typhoid fever, 951
  mastitis in typhoid fever, 283
  myelogenic leucemia, 758
  nephritis, 288
  plumbism in an infant, 173
  poliomyelitis and encephalitis, 307
  septicemia, 474
  suppuration of the middle ear, the etiology, pathology and symptomatology of, 105
  suppurative cervical adenitis of infancy, 910
  yellow atrophy, chemistry of the liver in, 309
Adams-Stokes disease, pathology of, 313
Additional milk inspectors appointed, 1088
Addition to Augustana Hospital, 612
Adenomyomata of the uterus, 380
Administration of heroin in children, 511
Adrenal extract may be valuable in the treatment of constipation, 863
  gland and antitoxin, the, 1050
Adrenalin, 365
  as a stimulant, 212
  dangers and benefits of, etc., 1196, 1197
  in urethral work, 359
Address of Dr. Lorenz, 234
  of the retiring president, 331
Addresses of welcome, 902
Affections of the labyrinth resulting from general and organic disease, 197
Against use of phosphorus, 1142
Age of German university professors, 762
Agglutinated red cells, thrombi due to, 27
Agglutination of the blood plates in febrile diseases, 1134
Agurin, efficiency of, 295
Air infiltration, 986
Albumin and casts, 476
  in the urine, prognostic significance of, 637
  the splitting of, by bacteria, 78
Albumin through the placenta, the passage of, 77
Albuminoids, poisonous, alcohol as antidote for, 1083
Albuminuria and diabetes, 1045
  and eclampsia, statistical review of cases of, 1178
  and life insurance, 476
  and long life, 476
  tests for, 509
Alcohol and muscular strength, 899
  as antidote for poisonous albuminoids, 1083
  autohemolysis from, 1134
  compresses, 1182
  in therapeutics, 1182
Alcoholism in insanity, relation of, 1173
Aldrich, Charles J, trap-drummer's neurosis; a hitherto undescribed occupation, disease, 257
  Charles J., neuritis following Ludwig's angina; report of a case, 1210
Alexander's operations, 361
Alkaloids of ipecac, 366
Almshouse, site probably chosen, 35
Almshouses and jails, 519
Alopecia areata, 605
Alumni Mt. Sinai Hospital, 178
Amebic dysentery at Johns Hopkins, 997
  dysentery endemic, 997
Amending the British Columbia medical act, 895
Amendment to the medical act of New Brunswick, 895
American Academy of Medicine, 801
  and European methods of treating tuberculosis compared, 35
  Association of Pathologists and Bacteriologists, 959
  climates for the tuberculous, 230
  contributions to knowledge of pancreas, 948
American Congress on Tuberculosis, 1222
  Gynecological Association, 1006, 1052
  Gynecological Association, officers for, 1904
  Italy, the, 856
  Medical Association meeting, 566
  Medical Association, the, 891, 900, 993, 1040
  Medico-psychological Association, 325
  pediatrics and English reviewers, 610
  Pediatric Society, 1049, 1093
  Philosophical Society, 707
  Neurological Association, 802
  Surgical Association, 1046
  Urological Association, 802
Amputation under cocaine anesthesia, 1132
Amputations, osteoplastic, of the knee, 1128
Anachlorhydria, 72
Anaerobic bacillus, disease of mice produced by an, 212
Anal fissure, the cure of, without operation, 1022
Analysis of cases of gastric ulcer, 944
  of fluid in hydrops of the gall-bladder, 752
Anatomical and histological changes of the nervous system in Parkinson's disease, 266
  and physiological correspondence of child and adult, 910
  obstacles to the reduction of old dislocations of the shoulder, 697
  relations of bile duct and pancreatic duct, 946
Anchylostomiasis, 214, 890
Anders, J. M., social conditions in America in their relation to medical progress and disease, 868
An early case of osteitis deformans, 124
Anemia due to toxins, 995
  from uncinariasis, 995
  in children, 952
  postvaccinal, in infants, 1180
Anemic anesthesia or suggestion? 41
An epidemic of 38 cases of infantile paralyses, 306
Anesthesia, 210
Anesthesia, general, shock produced by, 1130
  fluids and tissues in physico-chem-
Anesthesia in China, 227
  local, 1099
Anesthetics, 472, 792
Aneurism of aorta rupturing into the esophagus, 1139
  radical cure of, 604
Angina, a new bacillus of, 314
Animal not human disease, 1043
  fluids and tissues in physico-chemical relation, 310
An instrument for measuring the rate of coagulation, 757
  interesting cardiac lesion, 124
  interesting case of paraplegia with Recklinghausen's disease, 183
  interesting medicolegal case, 801
  intra-uterine applicator for fluids, 362
  operation for paronychia, or "run-round," 680
Announcement, 1038
Annual addresses of State Medical Society, 123
  lecture of McGill University, 226
  meeting Montreal General Hospital, 419
  report of the Alexian Brothers' hospital, 323
  report of the secretary of the State Board of Health, 373
Anomalous cases, 476
  heart disease, 44
Another Sicilian journal, 85
Anterior transplantation of the round ligaments, 605
Anthrax bacilli, granules of, 314
  in Louisiana, 759
  serum, an, 1100
Antileucemic serum, a leucolytic, 606
Antimalarial laws in Italy, 227
Antipyrine, action of, 70
Antisepsis, intravascular, 510
Antiseptic value of colloid silver, 28
Antispitting league formed, 706
Antitoxic, veratrum viride as an, 59
Antitoxin, complications attending use, 645
  scandals, 1138
Antral disease, symptoms of, 860
  empyema, 29
Anuria calculosa treated with the permanent catheter, 1108
  nephrotomy for, 558
  without uremia, 366
An unusual case of strangulated hernia, 505
Aorta, a case of rupture of the, 1082
Aphasia, dysphasia or, in tuberculosis meningitis, 262
Apparenta fetal substitution, 488
Appearances of ova, 993
Appearance of sufferers from intestinal parasites, 994
Appendages for sterility, operations upon the, 170
Appendicitis, acute, 119
  from the standpoint of the gynecologist, 907
  in its acutest forms, 646
  leucocytosis in, 210
  prompt operation in the beginning of the attack will save nearly all cases of, 838
  subphrenic abscess as a complication of, 149
  the discrepancy between clinical manifestations and pathological findings in, 396
  the mortality in, 833
Appendicostomy (Weir) for the treatment of chronic ulcerous colitis, 1203
Appendicular colic, 409
  pain in acute lobar pneumonia of infants, 412
Appendix, fetal, the relation of meconium to the, 1214
Application of cold in gynecology, 360
Appointment, 38, 660
  of Dr. Calkins, 82
  of Dr. La Fetra, 222
  of Dr. Noyes, 562

Appointment of Dr. Pederson, 705
  of Dr. Stewart, 227
  of Drs. Thatcher and Bovaird, 465
  of Dr. Vogel, 1087
Appointments at Columbia, 1138
Appropriations for Philadelphia hospitals, 756
  the *Herald* on Health Department, 270
Are the hemolymph nodes organs sui generis? 310
  the rectal valves the result of pathological changes? 863
  we improving our opportunities? 609
Argon and helium, 855
  and helium in mineral waters, 855
Argyrol, method of using, 172
Aristochin, 30
Army suicides, 758
Arneil, James Rae, a new sputum slide, 351
Arsenic in the treatment of tuberculosis, 218
Arteries, sutures of, 698
Arteriosclerosis and liver sclerosis, 279
  and the digestive system, 277
  and the nervous system, 278
  and the heart, 277
  as a mortality factor, 280
  in the kidney, 277
  in the young, 280
  of mental disease, 278
  of retina, 37
  practical aspects of, 267
Arteritis and arterial thrombosis in typhoid fever, 379
Arthritis, 139
  deformans, 1043
  deformans at Johns Hopkins, 1043
  deformans in children, 651
  deformans in the dissecting room, 1044
  infective, 212
  suppurative, drainage of a knee-joint in, 1213
  treatment of rheumatoid, 514
Artificial development of parasitic tumors, 313
  feeding, 911
  imitation of pathological cell conditions, 854
  immunity in experimental tuberculosis, 949
Asepsis, operative, 508
Aseptic surgery on the Niger delta, 403
  thermometers, new device for providing, 1142
Association of American Medical Colleges, 898
  of American Physicians, 948, 1050, 1098
As to prognosis in nephritis, 795
Asylums of curative institutions, 229
Ataxia, locomotor, a study of 140 cases of, 7
Atonic gastric insufficiency and dilatation, 262
Atropine in intestinal occlusion, 366
Autohemolysis from alcohol, 1134
Autotoxemia and ductless glands, 141
Axial rotation of the penis, 327

BACILLUS aerogenes, general infection with the, 28
  diphtheriæ, new differential stain for the, 510
  of diarrhea and dysentery, 319
  of dysentery, serumtherapy against the, 29
  coli communis, infection by, 1081
Backward dislocation, 283
Bacteria in ice cream, 127
  very small, and their passage through filters, 28
Bacterial agent of chorea, endocarditis and rheumatism, the, 858
  origin of gall-stones, 1005
Bactericidal action of the X-rays, 316
Bacteriological examination of the blood, 373
  examination of the blood in scarlatina, 694
Bacteriology of pulmonary and bronchial suppurations, the, 841
  of scarlatina, 841
Bacteriuria, a case of, resembling Weil's disease, 1069
Bag and hand dilatation, 1198
Bailey, Pearce, fracture of the base of the skull—neurological and medicolegal considerations, 918
Bainbridge, William Seaman, periduodenal abscess secondary to the ulcer of the duodenum, 433
Balloon, physiological observation in a, 77
Baltimore infectious disease hospital, 86
  items, 566
  personals, 127
Bandage in ophthalmology, the, 979
Bandler, Samuel Wyllis, the etiology of ectopic gestation, 486
Banquet of College of Physicians, 222
  of ex-resident physicians of university, 466
  to Sir James Grant, Ottawa, 895
Barbers ask for sanitation, 418
Barber shop, syphilis in the, 211
Bardes, A. C., eye strain, 249
Basedow's disease surgically considered, 355
Bathycardia, 948
Bayard, Dr. William, St. John, N. B., honored, 660
Beef trust and the food commissioner, 1221
Beer-yeast in otology, 29
Beggs, Wm. N., chronic parenchymatous pulmonary tuberculosis, 774
Bellevue Alumni, 321
  and allied institutions, report of, 1087
Beriberi on board ship, 842
Berkefeld filter, permeability of the, 314
Bernays, A. C., prompt operation in the beginning of the attack will save nearly all cases of appendicitis, 838
Best methods for the prevention of hydrophobia, the, 814
Beta-eucaine, its advantages over cocaine, 352
Better methods for repair of the perineal structures, 909
Bilateral bony anchylosis of the temporo-maxillary articulation of traumatic origin and its surgical treatment, 322
Bilharazia, cystitis and tumors of the bladder in, 698
  hematobia, a case of, 1146
Biliary passages, the surgery of the, 694
  secretion and their treatment, functional disorders of the, 343
Bill for the establishment of an epileptic colony, 373
Billings, Frank, medical education in the United States, 865
Biochemisches Centralblatt, 374
Birth-marks, removal of, 1100
Birth of double monster, 564
  palsies, 1144
  paralysis, suture of the brachial plexus in, 604
  rate of Chicago, 418
Bismutose, therapeutic value of, 174
Black, Carl E., spinal concussion, so-called, 577
Black-water fever, 215
Bladder, disease of the, 1163
  hernia of the, 354
  intraperitoneal rupture of the, 603
Blake, Joseph A., some problems in the major surgery of the kidneys; with a report of cases, 673
Blank cartridge wound infected with tetanus excision. Recovery, 696
Blastomycetic dermatitis, 379
  lesions, 854
Blastomycosis, systemic, a case of, 1133
Blood and amniotic fluid of the mother and fetus, the, 1178
  change due to syphilis and mercury, 646
  changes in syphilis, 363
  counts, increased, due to high altitudes, 1081
  enemas in chlorosis, 993
  examination in general practice, 232
  from the rabbit, a simple method of obtaining, 1146
  investigations in syphilis, 645
  of cold-blooded animals, hemolysis in the, 28
  origin of cholesterin, 1005
  -platelets, living, the staining of, 1083
  -poisoning and the streptococcus, 475
  -pressure, influence of baths on, 215
  -pressure in man, notes on, 926
  -pressure observations, 412
  -pressure, the importance of, 268
Body weight in pulmonary tuberculosis, 1079
Boiling as a method of sterilizing catheters, 56
Boldt, H. J., scope of the vaginal section, 568
Bone cavities, treatment of, 1215
  cysts, 506
  implantation, 855
  necrosis, new germ causing, 28
Bonney, S. G., four months' experience with antistreptococcic serum in pulmonary tuberculosis, 1108
Books received, 48, 144, 336, 384, 432, 528, 576, 720, 768, 864, 960, 1104, 1152
Boric acid, the misuse of, 317
Bossi dilator and its place in accouchement force, 1199
"Boston Medical and Surgical Journal's" seventy-fifth anniversary, the, 510
Bostwick drug bill passed, 820
Bovée, J. Wesley, nephrorrhaphy in intermittent hydronephrosis, 884
Bovine tuberculosis of human beings, 949
  tuberculosis to man, transference of, 315
Bowen, W. C., hematocele, 24
Boycott of retail druggist threatened, 1036
Boy's venereal peril, the, 903
Brain, headrest for removal of the, 809
Breast, supernumerary, in the axilla of an adult male, a case of, 21
Breus, the hematomole of, 1083
Brewer, George Emerson, some practical points in the anatomy of the gall-bladder region, 821
Brief consideration of the mechanism of mental states encountered in alcoholic insanity, with illustrative cases, a, 580
  review of some of the etiological factors in intestinal dyspepsia, 727
Brinton's plastic linitis, 214
Bronchopneumonia and malaria, 284, 285
  the diagnosis and treatment of, 809
Bronchoscopy and tracheoscopy, 263
Bronson, Edward Bennet, itching: its occurrence both as a concomitant and as a cause of disease, 736
Brooks, Harlow, a contribution to the pathology and prognosis of the diseases of the bladder, 1163
Brothers, Abram, pelvic suppuration in the female, 1072
Brown, Everett J., cast from a case of membranous croup, 1207
  James Moreau, report of a case of stammering and method of treatment, 1211
  Thomas R., the origin of the eosinophiles and their diagnostic and prognostic importance, 1117
Bryn Mawr Hospital, 1036
Bubonic plague at Iquique, 1092
Bull-fight, the Madrid, 1193
Byways of Medical Literature, XII 40
  of medical literature, XIII, 613
  of medical literature XIV, 1228

CALCIUM hydrate in diabetes, 513
  phosphorus and nitrogen metabolism in acromegaly, the, 113
  salts and uric acid calculi, the, 754
Calculi, prostatic, with report of a case, 254
Calomel in pneumonia, 654
Camac, C. N. B., a preliminary report on the venous hum in relation to the state of the blood, 540
Campaign against tuberculosis in Montreal, 374
  of the reorganized Philadelphia health board, 1139
Campbell, William Francis, a contribution to the surgery of the internal saphenous vein, 347
Canada Medical Act in the Quebec legislature, the, 708
Canadian doctors cannot practise in South Africa, 639
  Medical Association, 660
  quarantine laws, 227
Cancer and immunity, 870
  and variola parasites, the, 1183
  of the larynx cured by the X-rays, 120
  of the stomach, diagnosis of how easily we can be mistaken, 590
Cancroin, value of, 365
Capsule of the kidney, 1051
Carbolic acid poisoning by external application, 1132
Carcinoma cured by X-rays, laryngeal, 171
  late recurrence of, 212
  of the appendix, primary, 1129
  of the cervix together with a seven months' pregnancy, 462
  of the cervix uteri, 1054
  of the esophagus, the etiology of, 1132
  of the kidney, 805
  of the stomach, a case two years after removal of, 1101
Cardiac tonics before operation, 696
Cardiopathies and pregnancy, 360
Cardioptosis, 1081
Cardiospasm or dilatation of the esophagus, 955
Careful living and long life, 476
Care of dull children, 371
  of indigent poor and the dying, 36
  of insanity, 229
  of the poor for children, 950
Case against malaria, the, 1092
  for diagnosis, a, 328, 329, 572

  in which both testes passed into the scrotum through one inguinal canal, a, 572
  of bubonic plague, a, 373
  of cervical rib, a, 353
  of chronic tic, with remarks on the classification of myospasms, 479
  of dermatitis medicamentosa, 328
  of Dr. Whitman, short humerus arthritis, 384
  of enchondroma of the spinal column, a, 955
  of Filaria Bancrofti, 765
  of inversion of the uterus of sixteen months' standing; replacement by anterior colpotomy and anterior uterotomy, with recovery, 323
  of multiple neuritis with intact reflexes, a, 477
  of myokymia, a, 477
  myoclonus multiplex Friedreich, 479
  of myoclonus, 477
  of nephrolithotomy, 570
  of parasitic affection of the lip, 327
  of poliomyelitis in an adult involving all four extremities, a, 894
  of possible splenomegaly, 322
  of prurigo, a, 328
  of rupture of the aorta, a, 1082
  of syphilis of the lip, 328
  of vascular mole, a, 701
Cases in physicians, 472
  in which aconite must be given with caution, or is contraindicated, 288
Castor-oil bean, poisoning by the, 809
"Cat-fear," 896
Catheterism of the ureters, 359
Catheters, boiling as a method of sterilizing, 56
Cathode and ultra-violet rays, therapeutic value of, 1014
Cause in bacteriology, 467
  of gall-stones, 238
  of gastric hemorrhage, 70
  of Napoleon's death, 227
  of polycythemia in cases of congenital cyanosis, 322
  of the sleeping sickness, the, 613
  of smallpox, the, 844
Causes for constipation which cannot be reached by mechanical methods, 863
Celebrating anniversary of Founder's Day of the Northwestern University, 273
Celiotomy during pregnancy, 699
Cells, heart disease, 213
Centralblatt für allgemeine Pathologie, 1141
Cerebellar tumor, 617
Cerebral localization, observations on, 265
Cerebrospinal meningitis at League Island, 984
  meningitis on receiving ships, 944
Certain forms of cyanosis with polycythemia, 182
Cesarean section, abdominal and vaginal, etc., 1198
Cervical incisions in labor, 1199
Chances for successful pancreas operations, 948
Change in asylum methods advocated, 35
  in public health law, 984
Changes in faculty in University of Illinois, 1140
  in peripheral nerves produced by toxic substances, 702
  in the blood after venesection, 217
  in the medical corps of the navy week ending December 27, 87
  in the medical corps of the navy week ending January 3, 87
  in the vessels and lymphatics in syphilis, 860
  of blood-pressure in disease, 215
Charity supervisors outline plans for Hardesty farm, Maryland, 759
Cheap thermometers, 1144
Chemical medicine, 902
Chemistry of blood in chlorosis, 309
  of feces, 43
  of the liver in acute yellow atrophy, 309
  of the pancreas, 946
Chest in tuberculosis, the shape of the, 1081
Chetwood, Charles H., the facts in a case of hematuria, 256
Chicago's health, 707, 758
Chicago Surgical Society, 1100
  Gynecological Society, 1197
Child labor in Pennsylvania, 944
Children, peliosis rheumatica in, 358
  sudden death in, 357
Children's hospital society, 419
  sanitarium opened, 1138
Childs, Samuel Beresford, cases illustrating the therapeutic uses of the Roentgen rays, 145
Chloride of ethyl, general anesthesia with the, 118
Chloroform, why it should be used in puerperal eclampsia, 24
Choice of an anesthetic, the, 658
  of anesthetics, the, 1001
Cholecystitis, 1004
Choledochtripsy, 1006
Cholera antitoxin, 71
  at Manila, 896
  infantum serum, 371
  in Palestine, 374
Chondrodystrophy. totalis, a case of, in a child fourteen months old, 1096
Chorea, 308
  electrica, 511
Choreiform symptoms, a fatal case of polyarthritis complicated by, and vegetative endocarditis, 253
  symptoms and vegetative endocarditis, 253
Chorionepithelioma (deciduoma malignum), 512
Chorioretinitis, 529
Christian, Henry A., subphrenic abscess as a complication of appendicitis, 149
  hospital enjoined, 1140
  Scientists lose suit for charter, 894
Chromic acid factories, septic perforation in, 318
Chronic bilateral parotiditis, 411
  constipation both a symptom and a cause of disease, 863
  cyanosis, 952
  cyanosis not rare, 953
  lymphatic leucemia spleen normal, 952
  parenchymatous pulmonary tuberculosis, 774
  purulent otitis media, the etiology, pathology and symptomatology of, 110
  sphenoiditis and middle-ear disease, 653
  splenomegaly with anemia and myelemia, 409
Chylous ascites.—A case due to total occlusion of the thoracic duct, 411
Cicatricial anchylosis of the jaws, 999
  contraction of elbow, 281
Cigar-smoke and hydrocyanic acid, 651
Cinnamate of soda in tuberculosis, 991
Circular enterorrhaphy, 906
Circulation of puerperal eclampsia, the, 974
Circumcision and impotence, 276
  as a suggestive factor, 276
Cirrhosis of the liver in chronic tuberculosis, 1100
City consumption camp. 657
  hospital diet, 1218
  officials enjoined from purchasing vaccine privately, 466
  tuberculosis camp, 371
Civic responsibility and neglect, 1041
Clark, L. Pierce, a plea for a neurological hospital in New York, 195
Cleaning sick-rooms, 612
Clemens, James B., complications of acute middle-ear suppuration, 106
  J. R., the treatment of acute gout, 773
Clinic by Professor Mikulicz, 846
Clinical diagnosis of intestinal parasite, 993
  forms of hyperchlorhydria, 911, 992
  proofs, 229
  report of a case of tubercular leprosy, 178
  reports of fractures of the upper third of the femur, 1000
  significance, 44
  significance of the albumoses, 752
  splenic anemia, 951
  study of nail disease, 25
  symptoms (malarial dysentery), 996
  types of pulmonary tuberculosis and their therapeutic indications, the, 855
Clinics by distinguished surgeons, 847
  by Dr. Kehr, 943
Closure of wounds, the, 1000
Clubfoot operated on by Prof. Lorenz, 1050
  treatment of, 1100
Coagulability of blood, effect of lymph on the, 313
Cobb, J. O., pneumonia: an infectious disease, 550
Cocaine abused, 273
  anesthesia, amputation under, 1132
  and adrenalin for anesthesia of inflamed tissues, 695
  habit, 273
Coccygeal tumor which interfered with labor, a, 701
Cockroaches as conveyers of typhoid infection, 225
Code of ethics, 902
Colchicum in the treatment of gout, 1105
Cold-blooded animals, hemolysis in the blood of, 28
Colds, the etiology of, 481
Coley, William B., the limitations of the X-ray in the treatment of malignant tumors, 193
Collapse in acute infectious diseases, 266
Collargol, intravenous injection of, 697
College graduates, families of, 560
  graduation, the age of, 1189
  of Physicians and Surgeons, Baltimore, 86, 566
  of Physicians and Surgeons and hospital appointments, 942
  of Physicians fund raised, 466
  of Physicians, new site chosen for, 1088
Colleges secure amendment of Pennsylvania medical bill, 658
Collins, Joseph, tabes dorsalis: a study of 140 cases of locomotor ataxia, 7
  Joseph, the symptomatology of tabes: an analysis of 140 cases of locomotor ataxia, 450, 491
  Joseph, the morbid anatomy and pathology of tabes, 1121, 1155
Colloid silver, antiseptic value of, 28
Columbia appointments and changes, 465
  faculty changes, 705
  medical department, President Butler on the, 1219
  prizes and awards, 1138
  University lectures, 270
Columbus hospital, 517
  hospital, New York, 465
Coma, diabetic, infusion for, 1212
Combined bisection of tumors and uterus with enucleation of the former in abdominal hysterectomy for large fibroid tumors, 1007
  clinical and laboratory study of the effects of peritoneal saline infusions in abdominal operations, 910
  intra- and extraperitoneal method of removing ureteral calculi, 377
Commercialism in system, 1089
Committee on the prevention of tuberculosis of the Visiting Nurses' Association, Chicago, 523
Common duct, gall-stones impacted in the lower part of the, 209
Comparative pathology of plants, 613
  statistics of infantile typhoid, 713
Complexity of function, 946
Complications attending use of antitoxin, 645
  of acute middle-ear suppuration, 106
  of chronic suppuration of the middle ear, 112
Complimentary dinner to Dr. Flexner, 800
Concealed accidental hemorrhage, 170
Concerning antiferments, 311
Concussion, spinal, so called, 577
Condition of the pancreas in cirrhosis of the liver, 217
  of typhoid in children, 711
Conductivity of nerves, the effect of sodium chloride and calcium on the, 78
Congenital criminal, the, 749
  cyanosis, 322
  dislocation of the hip, 138
  dislocation of the hip-joint, 1187
  dislocation of the radius, 998
  dislocation of the shoulder, 383
  dislocation of the small intestine, 264
  gastric spasm of the pylorus, 1097
  hernia of the liver into the umbilical cord, 459
  inguinal hernia, 74
  malposition of cecum and colon, with enclosure of ileum and cecum in membranous sac, 1046
  unilateral renal defect, 697
Congress of American Physicians and Surgeons, 939, 946, 1004, 1046, 1093
Conjugal syphilis, 45
Consent of the patient for operation, 418
Conservative operations on the ovary, 363
  surgery and its dangers in gynecology, 621
  surgery of the sclerotic ovary, 1004
  surgery of the tubes and ovaries, 700
  surgery on the adnexa, 648
Consideration of the scientific application of mechanical vibratory stimulation in the treatment of disease, a, 154
Constipation a disease per se, 863
  non-medical treatment of, 1130
Constitutionality of medical school diploma requirement, 897
Constitutional origin of gall-stones, 1005
Contagious diseases hospital in Montreal, 660
  diseases, hospitals abandoned, 271

Continued fever neither malarial nor typhoid, 903
Continuous intra-uterine irrigation in grave puerperal sepsis, 1037
Contractures, cicatricial, treatment of, 938
Contraindications for prostatectomy, 234
Contribution to the diagnosis and treatment of the surgical diseases of the ureter and kidney, a, 224
  to the pathology and prognosis of diseases of the bladder, a, 624, 1163
  to the surgery of the ureter, with report of a case, 225
Contributions to the knowledge of hereditary diseases, 304
  to the surgery of cerebral tumors, 1049
  of surgery to internal medicine, 953
Contusions, abdominal, 604
Convenient method for growing and storing virulent pneumococci, a, 1147
Convulsions, infantile, treatment of, 1175
Cook, G. Wythe, the treatment of typhoid fever, 401
Cooking and indigestion, 143
Cooper hospital may suffer severe loss, 563
Cornell University Medical College, 610
Coroner's work during 1902, 83
Corrosives, poisoning by, 1201
Cortical hemianopsia and sector defects of the visual field, 386
Coryza in nurslings as a symptom of syphilis, 858
Costal hydatid cyst, 505
Coxa vara, etiology of, 556
Craniotomy, 170
Crawford, Wm. B., extraperitoneal ligation of external iliac for femoral aneurism, 887
Creosotal in croup, 365
  in pneumonia, 411
Cretinism, case of, 808
  in France, 227
Crile's pneumatic suit, 1196
Criminal, the congenital, 749
Crook, James K., observations on American climates and localities in the treatment of pulmonary tuberculosis, 552
Croup, membranous, cast from a case of, 1207
  creosotal in, 365
Crustacean heart, some physiological observations on a, 544, 596
Cryogenine, 854
Cryoscopy, 752
Culture media, value of phenolphthalein, 28
Curative serum for plague, 1043
Cure for seasickness, 1078
  of cocaine habit, 273
Cures, 473
Curious chemical effects, 947
Cystectomy for extrophy of the bladder, 622
  for tuberculosis of the bladder, 622
Cystitis and tumors of the bladder in bilharzia, 698
  tuberculous, 360
Cystoscopic bladder examination, 718
Cysts in the teeth, 506
Czolgosz and his crime, a later interpretation of, 368

DAILY rhythm of epilepsy and its interpretation, the, 332
Damage, renal, and phloridzin, 26
Danger of alcohol and thymol, 995
  of curettage, 475
Dangers of examinations for parasites, 993
  of the treatment, 955
Deafness, electricity in, 512
Dean of physicians, the, 520
Dearborn, George V. N., some physiological observations on a crustacean heart, 544, 596
Death of Dr. Love, the, 1186
  of fetus following an injection of diphtheria antitoxin into mother, 890
  rates and the census, 709
Deaths from plague in the Punjab, 1092
  from pneumonia, 1037
  from pneumonia among city employes, 943
Decapsulation of the kidney, results of, 1129
Deciduoma malignum after menopause, 700, 701
Decreased mortality, 565
Degeneration of red blood cells, 233
Degrees conferred, 273
Degree for trained nurses, a, 893
Delegate to Berlin, 944
Delphey, Eden V., the Roentgen ray: its mechanics, physics, physiology and pathology, 744
Demonstration of blood smears from a case of pseudo-leucemia infantum, 765
Dench, Edward Bradford, the etiology, pathology and symptomatology of acute suppuration of the middle ear, 105
  Edward B., ossiculectomy, 389
Dennis, Frederic S., the indications for operative interference in intracranial tension, 534
Dental class, largest before State board, 1186
Denver Academy of Medicine, 708
Department of health notice, 222
  of health and charities, 800
Dependence of skin affections upon nutritive disturbances, 25
Depilatory or chemical shaving, 234
Dermatomyositis, 950
Destruction of rats, the, 748
Detection of renal calculi by X-rays, 978
Determination of fat and total solids in milk, the, 1095
  of "purin" bodies, 508
Development of children, 910
  of etiological knowledge of smallpox, 959
  of islands, 946
  of the islands of Langerhans in the human embryo, the, 659
Dextrine in plaster of Paris, 798
Diabetes, glycosuria and, 889
  glycosuria of, the value of drugs in the, 1079
  terminal coma in, 890
Diagnosis and treatment of bronchopneumonia, the, 809
  and treatment of septic synovitis, 557
  of diseases of the biliary tract, 1004
  of foreign bodies upon the surface of the eye, 796
  of gall-stones, the, 238, 825
  of gastric ulcer, orthoform in the, 213
  of intestinal indigestion, 141
  of intestinal injury, 1129
  of intestinal injury following abdominal contusion, 83
  of intestinal obstruction, 717
  of leprosy, 601
  of pneumonia, 659
  of tubal abortion, 461
  of typhoid, 712
  of typhoid fever, laboratory aids in, 302
  thoracic compression as a means of, 264
  tuberculin as a means of, 215
Diagnostic value of abdominal rigidity, 558
Diazo-reaction, value of, in typhoid fever, 1081
Dietetics, 1211
Differential diagnosis, 44, 284
Differentiation of monkey from human blood by the serum test, 667
Differing localization of arteriosclerosis, 279
Difficult anesthetization, 508
  to enforce law against expectoration, 563
Difficulties in diagnosis between hepatic calculi and renal calculi, 557
Dilatation, bag and hand, 1198
Dinner to Dr. Anders, 800
Dinner to Dr. Casey A. Wood, 38
Diphtheria antitoxin, death of fetus following an injection of, into mother, 890
  antitoxin in bronchopneumonia, 411
  antitoxin to have place in pharmacopeia, 518
  bacilli, new stain for, 78
  spread at Newport station, 1038
Diplococcus phlogogenous pleuro-pulmonaris, 606
Diploma requirement before examination, 897
Disappearance of yellow fever from Havana, Cuba, 1
Discovery of malarial organisms, 285
Discrepancy between clinical manifestations and pathological findings in appendicitis, 396
Discussion of anterior dislocation of the wrist, 384
  of Dr. H. Gibney's cases, 384
  of Dr. Mayo's paper, 985
  of Dr. Sayre's case, 383
  of the case of walrus deformity, 383
  of the Lorenz cases and other hip cases, 383
Disease, 281
  changes of blood-pressure in, 215
  of mice produced by an anerobic bacillus, 212
  of the biliary passages, 467
Diseases of the heart and kidneys, hydragogin in, 785
  of the liver, 1070
  simple, of the stomach, surgery of the, 1057
Disingenuousness of authorities, 1043
Dislocation, congenital, of the small intestine, 264
  of the hip in a child, acquired, 74
Dislocations of the shoulder, anatomical obstacles to the reductions of old, 697
Distinctive spread of the disease (arthritis deformans), 1044
Distribution of albumin in animal and human body fluids, the, 889
  of Cochin China parasite, 904
Disturbances of respiration in the newborn, 1097
Diuretic action of rectal irrigation. The specific action of normal saline solution in the production of diuresis, the, 22
Does the practice of medicine pay? 608
Dogs must go muzzled, 1185
Dominion Medical Council, 896
Double uterus and vagina, labor with, 605
Drainage in operations for suppurative disease of the pelvic organs, 92
  of the chest in empyema, the, 519
Dr. Allport, appointment of, 1222
  Austin Flint's collected works, 893
  Browning's fee increased, 1221
  Christopher, resignation of, 1187
  Colburn, election of, 1222
  C. A. Ewald, 706
  Flexner may leave university, 372
  Gorgas honored, 1219
  Gulick and physical training in our schools, 706
  Harris goes to Chicago, 896
  Isaac Wood and dissection material in the early days, 850
  James leaves estate to charity, 178
  John Connell of Jersey City, 181
  Kirk selected as representative to international congress, 563
  Le Conte appointed surgeon-general of Pennsylvania, 418
  Lederle is praised, 563
  Martin appointed director of public health and charities, 894
  Martin's appointment, 941
  Mayo to address Academy of Surgery, 894
  Mitchell deprecates college football, 1186
  Morton, the late Thomas G., 1121
  Mylan called to Columbia's gymnasium, 517
  Poore resigns, 1091
  S. Weir Mitchell dined by University Club, 466
  Walter Reed honored, 86
  Warthin to address pathological society, 756
Drennan, Jennie G., intermenstrual pain, 68
Drowning of patients in fecal vomit as a complication of operations during appendicitis and obstruction of the bowels, the, 1048
Drug habit, hyoscine in treatment of, 174
  habit in Toronto, the, 944
  samples, 893
  substitution and New York College of Pharmacy, 177
Drugs more palatable, methods which render, 1084
Duane, Alexander, some types of retinitis and chorioretinitis, 529
Dubious results and cases, 475
Ductless glands, function of the, 693
Duration of leucocytosis, 620
Duties and responsibilities of trustees of public medical institutions, 913
Dwarf tapeworm, the, 994
Dynamogenic or inhibitory action of light massage, the, 856
Dysenteric remedies, 997
Dysentery in children, 997
  treatment of tropical, with sulphur, 694
Dyspepsia, a brief review of some of the etiological factors in intestinal, 727
Dysphasia or aphasia in tuberculosis meningitis, 262
Dystrypsia (intestinal indigestion), 721

EARLY diagnosis of extra-uterine pregnancy, 56
  diagnosis of osteomyelitis, 1184
  diagnosis of pregnancy, the, 811
  symptoms of arteriosclerosis, 277
Eastern Medical Society, 657
East side physicians' club, 1186
Easy diagnosis of eye inflammation, 171

Eclampsia, constipation as a factor in, 1177
  puerperal, the circulation of, 974
  puerperal, why chloroform should be used in, 24
Economy society sells out, 848
Ectopia renalis with nephrolithiasis, and pyelonephritis, 135
Ectopic gestation, 649, 1002
  gestation, repeated, 76
  gestation, the etiology of, 486
  pregnancy, simultaneous intra-uterine, 168
Eczema in nursing infants, 652
Edebohl's operation, 1031, 1049
Edelman, Louis, the negro as a criminal and his influence on the white race, 196
Edema, acute circumscribed, 214
Educational reform in medicine, 79
  unification in New York State, 415
Education, medical, in the United States, 865
Eel-serum, study of, 314
Effect of antiseptics on the intestinal bacteria, the, 1082
  of cocaine upon intestinal absorption, 311
  of freezing and thawing on bacteria, 216
  of hypnotism upon the circulation, 365
  of lymph on the coagulability of blood, 313
  of morphine on the secretion of gastric juice, the, 1079
  of renal massage, 1078
Effects of injections of antidiphtheritic serum, antitetanic, and antistreptococcus serum, on the blood, 855
  of treatment at Franzensbad, the, 856
  of X-rays, 1100
Effects on the urine, 472
Efficiency of agurin, 295
Eisendrath, Daniel N., the elective system in medical schools, 489
Election of Dr. Billings, 179
  of Dr. Webster, 179
Elective system in medical schools, the, 489
Electrica, chorea, 511
Electrical response of nerve, the submaximal, 312
Electricity as a therapeutic agent, 120
  in deafness, 512
Electrolysis for stricture, 860
  in the Eustachian tube, 653
Electrotherapeutics, the proper recognition of, 1161
Electrothermic hemostasis in surgery, 857
  hysterectomy, 362
Elephantiasis congenita cystica, 698
  due to Filaria sanguinis hominis nocturnis, 1188
Eleven acute and eighteen chronic cases of influenza, 211
Elimination of a large myoma, gangrene and spontaneous, 27
Elsner, Henry L., on the resemblances of malignant endocarditis to typhoid and paratyphoid infections, 877
Embolism of superior mesenteric artery, 73
Empyema, antral, 20
  of the accessory sinuses of the nose, 48, 347
  treatment of, by continuous drainage, 1214
Endocarditis, 665
Endorsement of medical license in New Jersey, 897
Endothelioma of the uterus, 362
Engman, Martin F., the therapeutic use of suprarenal gland in certain diseases of the skin, 1023
Enlarged prostate, 210
  spleen, removal of an, 792
Enlightened legislature, an, 848
Enterectomy for malignant disease, 506
Enterospasm, intestinal occlusion from, 214
Enterostomy for peritonitis, 907
Entertainment of visitors, 894
Enucleation of sarcoma of the tibia, 806
Eosinophiles, origin of the, and their diagnostic and prognostic importance, the, 1117
Epidemic edema in infants, 358
Epidural injections, incontinence of urine and, 174
Epileptics, the invulnerability of, 306
Epiploitis after resection of the omentum, 859
Epispadias, 999
Epithelioma under the X-ray, 998
Erdmann, John F., prostatic calculi, with report of a case, 254
Eruptive fevers, guaco in, 174
  fevers in childhood, 37
Erysipelas and antistreptococcus serum, 365
Erythematosus lupus, 25
Erythroploeum, 230
"Esanofele bileris" in malaria, 513
Eshner, Augustus A., a fatal case of polyarthritis complicated by choreiform symptoms and vegetative endocarditis, 253
Esmarch's jubilee at Kiel, 520
Esophagotome, 977
Estate of Dr. T. G. Thomas, 563
Ether anasthesia, temperature range in, 312
Etiological factors of intestinal indigestion, 143
Etiology and treatment of bony anchylosis, 323
  of acne vulgaris, 1133
  of acute rheumatism, the, 644
  of carcinoma of the esophagus, the, 1132
  of coxa vara, 556
  of ectopic gestation, the, 486
  of malignant tumors, 854
  of pulsus infrequens, 279
  of rachitis, the, 1094
  of rheumatic fever, the, 855
  of tuberculous peritonitis, 509
  of typhoid fever in children, 712
  pathology and treatment of puerperal sepsis, the, 1052
Ethylchloride as a general anesthetic, 1131
Evans Dental Museum, the, 658
Evolution of ideas of delirium in anxious melancholia, 857
  of scirrhous carcinoma from cystic degeneration of the mammary gland, 1139
Exaggeration of reflexes.—A diagnostic sign in carcinoma, 412
Examination for marine hospital service, 944
  of milk by the general practitioner, 232
  of unstained blood, 902
Excision, new method of, of the head of the femur, 508
  of the proximal ends of the fallopian tubes at their origin in the uterus, the operation of choice, for the extremely rare cases wherein sterility is desirable, 1055
  of the superior maxilla under medullary narcosis, 607
Excretion of nitrogen in pneumonia, 216
Excursions in Old New York Medicine, 80
  in Old New York Medicine, I, 87
  in Old New York Medicine, II, 566
  in Old New York Medicine, III, 850
Exercise in the treatment of tuberculosis, 411
Exhibition of cases illustrating renal and ureteral surgery, 380
Exophthalmic goiter, 210
Expectant treatment in fracture of the spine, 284
Experience in gall-bladder surgery, 1005
Experimental pathology of appendix, 1100
Experiments with a new quinine derivation 258
Expert anesthetists appointed for Bellevue and allied hospitals, 82
  evidence: a reply to Hon. John Woodward, 640
  testimony, 1038
Exploratory operations, 905
  vaginal puncture and celiotomy in the diagnosis of diseases of female genital organs, 1003
Extensive burns and their treatment, 73
  intestinal resections, 353
Extraction in narrow pelves, 512
Extraperitoneal ligation of external iliac for femoral aneurism, 887
Extra-uterine pregnancy, 27, 168, 647
Eye affections, 36
  affections complicating and resulting from rheumatism, 690
  diseases and their recognition, 229
  inflammation, easy diagnosis of, 171
  -strain and headache, 231, 249

Face presentations and their prognosis, 856
Factors for diagnosis, 141
Failure of Chinese exclusion, 1043
Faintness at the sight of blood, 615
Falling of the hair, 654
False whooping-cough, 1082
Families of college graduates, 560
Fascia and levator ani in perineorrhaphy, a new method of suturing, 1176
Fatal acute splenic leucemia, 951
  case of anthracosis, a, 35
Fat diet and acetone excretion, 1098
  necrosis of the kidney, 905
  the fate of, in the organism, 313
Fats and soaps, 44
Fatty tissue, perirenal, 514
Favus scroti, coexistent with ringworm of the thigh, giving identical trichophyton-like cultures, 606
Febrile diseases, agglutination of the blood plates in, 1134
Fecal-vomit, the drowning of patients in, during operations for intestinal obstruction and septic peritonitis, 1102
Feeding, rectal, 263
Feet, ordinary soap in sweating of the, 25
Felon, the treatment of, 938
Felt, Carle Lee, postdiphtheritic paralysis affecting the ear and throat, 300
Female doctors, 1091
  medical legislation and the, 321
  pelvic suppuration in the, 1072
  urethra, prolapse of the, 605
Femur, a new method of treating fractured, 695
  fracture of the, 1215
Ferruginous waters for chlorosis, 855
Fetal typhoid fever, 711
Fever, black-water, 215
  following rat bite, 1187
  yellow, disappearance of, from Havana, Cuba, 1
Few animal parasites sometimes found in man, a, 764
Fibers, the taste, 978
Fibrinous pneumonia, treatment of, with hetol, 794
Fibrinopurulent cerebrospinal meninigitis from Pfeiffer's bacillus, 1084
Fibroids and heart disease, 461
  and ovarian tumors, the mimicry of pregnancy, by, 169
  of the uterus, 649
  uterine, the surgical treatment of, 1216
Fibroid tumor of the uterus, what advice should be given to a woman suffering from, 247
  polyp, fundal, and inversion of the uterus, 698
Fibrosis of bladder, 719
Fifty thousand dollars for a ward in Manhattan Eye and Ear Institution, 610
Fight against tuberculosis, 562
Filariasis, 793
Filling of bone cavities, 858
Filters, very small bacteria and their passage through, 28
Fingernails, 26
Finlay's work, 1041
Finsen light apparatus at Polyclinic hospital, 563
Fistulæ of the pancreas, 948
Five years for a midwife, 846
Fixation of the prolapsed kidney, 909
Flatfoot, 507
  in infants and children, 1175
Flies as carriers of bacteria, 1222
Florida Medical Association, 661
Folies toxiques, 857
Follicular conjunctivitis and trachoma, 653
Foods in the etiology of indigestion, 141
Football and accidents, 708
Footway nuisance, a, 1092
Foreign bodies upon the surface of the eye, diagnosis of, 796
Formalin in pulmonary tuberculosis, 213
  solution, 274
Formation of adhesions, 621
For medical research, 86
For mountain tuberculosis hospital, 759
For original research, 374
For State medical board, 124
Four cases of primary actinomycosis of the lungs, 840
Fourteenth International Medical Congress, 661, 845, 853, 910, 991, 1099
  International Medical Congress at Madrid, 274
Fourth Pan-American Medical Congress, 801
"Fourth of July" wounds, 1221
Fowler, Russell S., the operative treatment of fracture of the patella, 592
Fracture of the base of the skull—neurological and medicolegal considerations, 918
  of the patella and olecranon treated with a tendinous flap, 506
  of the patella, the operative treatment of, 592
  of the patella, with suture of the aponeurosis, 1101
  of the spine; three cases, 961
Fractured spines, 283
Fraser, Nutting, report of a case of rupture of the uterus; laparotomy; recovery, 1207

Freer, Otto T., tuberculosis of the larynx and aspiration tuberculosis of the lungs following dermatitis blastomycetes, 1027
French-Canadian Medical Society of Montreal, the, 708
Frequency and etiology of extra-uterine pregnancy, 649
  and treatment, 904
  of gout, 1045
  of Kernig's sign, 266
  of the persistence of diverticula, 717
Frequent association of hernia with hydrocele, 792
  palliative operation, 622
Friedreich's disease, 306
Friends' asylum, 847
Fuller, Eugene, a new use for thyroid extract; a cure, or at least a complete control of hemophilia through its administration; its effect also on another form of hemorrhage, 385
Functional disorders of the biliary secretion and their treatment, 343
  sexual disorders in the male, 275
Function of the ductless glands, 693
Further cases of chronic cyanosis, 953
  contribution to the surgery of undescended testicle, 999

GALL-BLADDER, indications for extirpation of the, 817
  -bladder region, some practical points in the anatomy of the, 821
  -stones and stomach diseases, 1005
  -stones impacted in the lower part of the common duct, 209
  -stones, the diagnosis of, 825
Gangrene and spontaneous elimination of a large myoma. 27
Gangrenous destruction of the pituitary body, 693
Gas evolved in the decomposition of hydrogen peroxide by pus, 216
Gastralgia and arterial degeneration, 280
  and heart pang, 278
Gastrectasia atonica, 693
Gastric digestion of the insane, 1174
  diseases, uterine and, the relation between, 699
  hemorrhage, cause of, 70
  polyp, 507
  sensations, 1179
  ulcer, 908
Gastro-enteric infections of new-born children, 1093
Gastro-enterostomy, 791, 958
Gastro-intestinal hemorrhage of the newborn, 361
  perforations and their diagnoses, 792
Gastroptosis, an original operation for, 604
  operation for the relief of, 354
Gastro-enterostomy versus pyloroplasty, 957
Gelatinized serum in typhoid hemorrhage, 654
General anesthesia, improvement of, 647
  anesthesia with the chloride of ethyl, 118
  anesthetic, ethyl chloride as a, 1131
  enlargement of glands, 951
  increase of sickness, 467
  infections, 861
  infection with the bacillus aerogenes, 28
  nervous system, postdiphtheritic paralysis affecting the, 296
  State statistics for 1902, 271
Genito-urinary therapeutics, 360
Geographical distribution of stone and calculous disorders, 603
Germ of smallpox, the, 959
Gift for children's hospital, 707
  to a London hospital, 944
  to an Orange hospital, 85
  to Long Island College hospital, 562
  to the Presbyterian hospital, 223.
Glanders in New York, 517
  report of a disease in the Philippine Islands clinically resembling, 70
Glandular enlargements and streptococcus infections, 620
Glaucoma, 30
  salicylate of sodium in, 514
Glycerol of iodine, 980
Glycosuria and diabetes, 889
  of diabetes, the value of drug in the, 1079
Goffe, J. Riddle, what advice should be given to a woman suffering from fibroid tumor of the uterus? 247
Goiter, exophthalmic, 210
  operative treatment of, 697
Goldstein, M. A., primary tuberculosis of the ear, followed by mastoiditis: report of four cases, 501
Goldwater, S. S., notes on blood pressure in man, 926, 966
Gonococcical pruritus, 890
Gonorrheal iridochoroiditis, 318
  ophthalmia, 26
  septicemia, 1047
  suppurative myositis, 381
Goodsell-Bedell bill, the, 941
Gorgas, W. C., disappearance of yellow fever from Havana, Cuba, 1
Gout, acute, the treatment of, 773
  colchicum in the treatment of, 1105
Governor Pennypacker and medical profession, 1227
Graduation of a large class, 1140
Graft and venereal infection, 1217
Grandin, Egbert H., the scope of vaginal section, 407
Granules of anthrax bacilli, 314
Graves' disease, 185
Greene, Robert Holmes, a contribution to the pathology and prognosis of the diseases of the bladder, 1163
Griffith, Frederic, a case of supernumerary breast in the axilla of an adult male, 21
  Frederic, a footway nuisance, 1091
  Frederic, aseptic surgery on the Niger delta, 403
Grip and pneumonia, 894.
Growth, weight and health, 983
Guaco in eruptive fevers, 174
Guarding against the plague in British Columbia, 226
Gunshot wound of brain with seven fragments of the bullet. Localization by Sweet's method made operation inadvisable, 1049

HABITAT of the hookworm, 994
Hair balls in the stomach, 315
Hand disinfection with sublamin, 210
Harmful and beneficial drugs, 142
Hartmann, Henri, surgical treatment in non-malignant diseases of the stomach: results and indications, 485
Harvard Medical Society of New York City, 619, 716, 1195
Harvard's medical school, 374
Hastings, T. W., hyperacidity of the urine, 633
Havana, Cuba, disappearance of yellow fever from, 1
Hay fever, treatment of, 1030
Headache 692
  from eye-strain, 654
Head nurse for Philadelphia hospital, 1221
Headrest for removal of the brain, 809
Healing by prayer lawful in old north State, 661
Health and Charities Department created, 756
Health Department Appropriations, the *Herald* on, 270
  officers in council, 1141
  officers re-elected, 181
  resort, New Zealand as a, 316
Heart disease cells, 213
Heart showing chronic tuberculosis of the pericardium with involvement of the myocardium, 612
  weakness and dilatation from nutritional causes, 904
Heart, wounds of the, 118
Heat for tuberculosis, 859
Heberden's nodes, 1044
Heitzman, Charles William, the treatment of tuberculosis, 345
Helen Keller's experiences, 615
Helter skelter diagnosis of rheumatism, 1045
Hematocele, 24
Hematoma of the abdominal wall, 805
Hematomole of Breus, the, 1083
Hematuria, the facts in a case of, 256
Hemianopsia, 45
  cortical, and sector defects of the visual field, 386
  following eclampsia, permanent, 317
  report of a case of monocular inferior, 784
Hemmeter, John C., intestinal indigestion (dystrypsia), 721
Hemoglobinuric fever, 1045
Hemolymph nodes abundant, 952
  nodes and their relation to adipose tissue, 847
Hemolysis in the blood of cold-blooded animals, 28
Hemolytic potency of certain sapotoxins, 314
Hemophilia, a complete control of, by thyroid extract, 385
Hemorrhage, 956
  concealed accidental, 170
Hemorrhages, gastric and duodenal, treatment of, 1180
Hepatic ballottement, 281
  duct, primary cancer of the, 71
Hepatoptosis, 645
Hereditary ataxia, 1050
  syphilis, 889
Heredity and arteriosclerosis, 280
  and localized arteriosclerosis, 280
Hernia of the bladder, 354
Heroin in children, administration of, 511
Herpes zoster, 26
High color and anemia, 953
Higher standard needed, 898
Hip-joint disease, 670
Hip-joints at home and abroad, 463
Hiss, Philip Hanson, Jr., and Russell, F. F., a study of a bacillus resembling the bacillus of Shiga, from a case of fatal diarrhea in a child; with remarks on the recognition of dysentery, typhoid, and allied bacilli, 289
Hitchens, Arthur P., some interesting phenomena of specific immune sera, 974
Home for the consumptive poor of New Jersey, 896
Homeopathic wards for Philadelphia hospital, 1036
  hospital, site selected for, 1220
Homeopaths ask for institution, 518
Honor for Dr. Lyle, 566
Hopkins hospital trustees contract for new surgical building, 375
Hospital burned, 85
  commencement, 1140
  facilities for treating venereal diseases, 901
  for consumptives in West, 1141
  for lepers in Paris, 85
  for nervous diseases, a, 220
  investigation ends, 1140
  wanted by women, 943
Hospitals crowded, 1088
  for contagious diseases in Montreal, 419
Hot air in rhinitides, 860
Hour-glass contraction, 956
How and when to apply forceps, 30
Howard, William Lee, expert evidence: a reply to Hon. John Woodward, 640
How easily we can be mistaken in the diagnosis of cancer of the stomach, 590
  to save diphtheria patients, 943
Human and bovine tuberculosis, 644
  blastomycoses, 861
  milk for infants, 858
  placenta, a serum specific for the, 316
Huntingdon's chorea, 272
Hurry and irresponsibility in the medical education, 1033
Hutchings, W. H., boiling as a method of sterilizing catheters, 56
Hutchinson, Jonathan, and his fish theory, 760
Hydatid cyst, costal, 505
Hydragogin, 785
Hydrocele, 318
  frequent association of hernia, with, 792
Hydrographic conditions of malaria, 859
Hydronephrosis, 1101
  intermittent, nephrorrhaphy, in, 884
  pathogenesis of, 505
Hydronephrotic kidney, 805
Hydrophobia, measures for prevention, 757
Hydrorrhea profluens, 231
Hydrosalpinx, the nature of, 700
Hygiene at Teachers' College, 82
  of young girls, the, 909
Hyoscine in the treatment of morphinism; its office and value, 405
  in treatment of drug habit, 174
Hyperacidity of the urine, 475, 633
Hypertrophy of the synovial fringes of the knee-joint, 1128
Hypnotics and their dangers, 1173
Hypochlorhydric dyspepsia, 174
Hypodermoclysis, 119, 793
Hypopyon karato-iritis, 172
Hyposystolia with anasarca, treatment of, 1030
Hysterectomy for fibroids, 459
  for uterine sepsis, 856
  in acute affections, 861
  in puerperal infections, 1179
  the bladder after, 169
Hysterical and organic disease, 230
Hysteroscopy, 856

ICHROHEMOGLOBINURIC fever Calabria, 992
Ichthyol, influence of, on the elimination of sulphur in tuberculosis patients, 1082
Iliac, external, extraperitoneal ligation of, for femoral aneurism, 887

- Case in which both testes passed into the
- Illinois State Medical Society, 612, 894
- Illustration of the reckless manner in which the testes have been removed for relief of prostatic symptoms, an, 571
- Imbedding tissues, new method for, 1133
- Immobilization in Pott's disease, 352
- Immune sera, specific, some interesting phenomena of, 974
- Immunity, cancer and, 870
  - in syphilis, 601
- Immunization of cattle against tuberculosis, 841
  - of the human against tuberculosis, 912
- Importance of an early diagnosis, 715
  - of a more radical operation in carcinoma cervicis, 76
  - of revulsive medication in therapeutics, 856
- "Impressions of the non-heredity of acquired characters," 1171
- Improved Method of discovering tubercle bacilli in the urine, 796
- Improvement of general anesthesia, 647
  - on Levi's carbolic treatment for hydrocele, with cases, 573
- Improvements needed in medical education, 897
- Incomplete congenital occlusion of vagina, 231
- Incontinence of urine, 558
  - of urine and epidural injections, 174
- Increased blood counts due to high altitudes, 1081
  - requirements for Rush medical college, 1037
- Increase in cancer in Ireland, 759
  - in the medical corps of the navy, 760
  - of nephritis, 141
  - of rabies and its prevention, 704
- Incubation period, 996
- Indian Territory Medical Association, 1091
- Indication for nephropexy, 352
- Indications for cholecystectomy, 905
  - for extirpation of the gall-bladder, 817
  - for use of rays, 958
- Infantile paralyses: an epidemic of 38 cases, 306
  - summer diarrheas. 996
  - typhoid infrequent but possible, 711
  - typhoid in New York, 712
- Infants, a new method of percussion of the spleen in, 263
  - epidemic edema in, 358
- Infarction, pulmonary, extensive, 1099
- Infected gall-bladder contents, 908
- Infection by bacillus coli communis, 1081
  - with the bacillus, aerogenes, general, 28
- Infectious disease, tonsillitis classified as an, 158
  - diseases, acute, collapse in, 266
  - of the new-born, the, 1094
- Infective arthritis, 212
- Inflamed tissues, cocaine and adrenalin for anesthesia of, 695
- Inflammation of the gall-bladder in typhoid fever, ending in perforation, 71
- Influence of baths on blood-pressure, 215
  - of diet; 947
  - of ichthyol on the elimination of sulphur in tuberculosis patients, 1082
  - of maternal nervous lesions on the vitality of the fetus, 701
  - of modern drugs in gout, the, 514
  - of sodium chloride upon gastric secretion, the, 303
  - of the nerves upon the healing of fractures, 841
  - of the toxins of diphtheria and of tetanus on the blood, the, 855
  - on bile, 947
- Influenza, 373, 374, 419, 659
  - eleven acute and eighteen chronic cases of, 211
- Injection of antistreptococcic serum as a means of treating variola, 794
  - of oxygen, 992
- Injections of calomel for ulcer of the leg, 603
  - of formalin, 474
  - of mercuric bichloride in puerperal septicemia, 174
- Injuries of pancreas, 947
- Injury, spinal cord, 782
- In memoriam (Reed, Major Walter), 180
- Innocent syphilis, 45
  - syphilis and its dangers, 43
  - syphilis and palate perforation, 716
- Inoculation for typhoid fever, 264
- Insane in British Columbia, 895
  - matters pertaining to the care of, 1219
- Insanity and the population, 565
  - increasing, 1037
  - increasing among the negro, 944
- Insomnia, massage of the neck for, 266
- Instruction of senior students in medicine, the, 53
- Instructions to those having gonorrhea or "clap," 43
  - to those suffering from syphilis, 43
- Instrument to protect the brain during a craniotomy with the Gigli saw, 1130
- Insurance of X-scientist, 661
- Intellectual life, the, 860
- Intercellular canaliculi of liver, bile concretions, in, 1100
- Intermediate type of fever, 1041
- Intermenstrual pain, 68
- Intermittent hydronephrosis, nephrorrhaphy in, 884
- Internal saphenous vein, a contribution to the surgery of the, 347
  - secretions, the significance of variations in the, 625
- International Congress of Hygiene, 1091
  - Dermatological Congress, 896
  - medical congress in Madrid, 181
- Internes for Cook County hospital, 848
- Interruption of pregnancy in the working women, the necessity for the, 76
- Interstitial pneumonia, 511
- Intestinal calculi, 44
  - dyspepsia, 142
  - indigestion (dystrypsia), 721
  - indigestion and nephritis, 142
  - indigestion and renal disease, 140
  - injury, diagnosis of, 1129
  - intussusception, 955
  - localization, 1048
  - occlusion from enterospasm, 214
  - therapy, 911
  - toxins and nephritis, 140
  - tuberculosis, primary, 1100
- Intestine, small, congenital dislocation of, 264
- Intracranial complications of septic osteitis, 512
  - tension, the indications for operative interference in, 534
- Intranasal surgery, post-operative management of, 172
- Intraperitoneal rupture of the bladder, 603
- Intravascular antisepsis, 510
- Intravenous injection of collargol, 697
  - administration of anti-diphtheritic serum, 358
- Intussusception, case of, 805
  - report of a case reduced by operation, 887
  - study of two cases of. Lumbar puncture in serous meningitis, 1095
- Investigating committee report, 801
- Investigation of perspiration, 841
- Investigations, comparative, of the blood and amniotic fluid of the mother and fetus, 1178
- In what way can the general practitioner assist in the purposes of the crusade? 523
- Iodoform poisoning, a case of, 1131
- Ions, antitoxic, new researches in the, 1083
- Iridochoroiditis, gonorrheal, 318
- Iron in therapeutics, 797
  - in the urine under physiological and pathological conditions, 510
- Irrigation method, inquiry into the value of the, 1133
- Irvine, Robert T., the congenital criminal, 749
- Irwell, Lawrence, "impressions of the non-heredity of acquired characters," 1171
- Is any diseased condition necessarily self-limited? 207
- Is atrophic coryza autonomous? 860
- Isham, A. B., veratrum viride as an antitoxic, 59
- Isolation and contagion, 762
- Is the study of pediatrics worth the attention it gets, and does it get the attention it deserves? 910
  - this wolf-wolf? 176
  - tuberculosis transmissible by cow's milk? 858
- Itching: its occurrence both as a concomitant and as a cause of disease, 736
- Ithaca's epidemic subsiding, 371

- Jackson, Edward, cortical hemianopsia and sector defects of the visual field, 386
- Jacobson, Nathan, the discrepancy between clinical manifestations and pathological findings in appendicitis, 396
- Jaundice persistent, 644
- Jefferson Medical College commencement, 1088
- Johns Hopkins Hospital Medical Society, the, 182, 805
- Joint diseases, tabetic, 265
  - research in physiological chemistry, 849
  - the malignancy of, tuberculosis, 264
- Jonas, A. F., cancer and immunity, 870
- Jubilee of Dr. James H. Richardson, Toronto, 895

- Keen, W. W., the duties and responsibilities of trustees of public medical institutions, 913
- Kemp, R. C., the diuretic action of rectal irrigation. The specific action of normal saline solution in the production of diuresis, 22
- Kernig's sign, frequency of, 266
- Kidney, sarcoma of the, 173
  - tuberculosis of the, 805
  - some problems in the major surgery of, with a report of cases, 673
- Kindergarten of crime, New York's, 1137
- King Edward's sanatorium, site for, 1091
- Kings county medical association, 322
- Knapp, Mark I., how easily we can be mistaken in the diagnosis of cancer of the stomach, 590
- Knife blade removed from lung, 697
- Knock-out blow on the point of the jaw, the, 1084
- Knowledge not yet definitely fixed, 1042
- Kolipinski, Louis, on simplicity in the operation for laceration of the cervix uteri, 1026

- Laboratory aids in the diagnosis of typhoid fever, 302
  - and bedside teaching, 902
- Labor, rupture of the uterus during, 699
  - with double uterus and vagina, 605
- Laceration of the cervix uteri, on simplicity in the operation for, 1026
- Lacerations of the cervix, 909
- Lackawanna county to fight tuberculosis, 124
- Lady Minto Cottage hospital fund, the, 1090
  - physicians honored, 1221
- Lambert, Edward W., the prognostic significance of albumin in the urine, 637
- Laparotomy convalescence, with reports of 20 illustratitive cases, 848
- Large doses of salicylates in uveitis, 654
- Larvated malaria simulating threatened abortion, 701
- Laryngeal carcinoma cured by the X-rays, 171
- Laryngitis, tuberculous, 796
- Late Dr. T. Gaillard Thomas, the, 569, 657
  - news from New Orleans, 910
  - recurrence of carcinoma, 212
- Latent malaria, 284
  - retrocecal abscess, 352
- Later interpretation of Czolgosz and his crime, a, 368
- Lavage of the stomach, 516
  - under pressure of the urethra in non-specific urethritis, 26
- Laval medical students hold annual dinner, 226
- Lectures by army surgeons, 82
  - by Dr. Cushing, 372
  - on the neuroses and psychoses of spirits and drug addictions, 178
- Lectures to State alienists, 755
- Lederman, M. D., the etiology, pathology and symptomatology of chronic purulent otitis media, 110
- Left-brainedness not right-handedness, 40
- Legal enforcement and its duties, 231
- Legislation for children, 986
- Lepers, asylum for, 1224
- Leprosy among soldiers, 1038
  - diagnosis of, 601
  - in a native of Philadelphia, 179
  - in Russia, 520
  - in Spain, 861
  - not dangerous in this country, 178
- Lesions which augment the development of tetanus and other infections, the, 1048
- Leucemia and miliary tuberculosis, 215
  - pathogenesis of, 314
- Leucocyte count, differential, in the early days of typhoid fever, 1148
- Leucocytes in typhoid, 215
- Leucocytosis, 619
  - and vital resistance, 620
  - a symptom of internal purulent accumulations, 795
  - in appendicitis, 210
  - the significance of, 1175
- Leucolytic antileucemic serum, a 606
- Leucoplakia, 318
- Leucoplasia in secondary syphilis, 1126

- Lewis, Robert, Jr., complications of chronic suppuration of the middle ear, 112
- Lewis, S., the cure of anal fissure without operation; report of eight cases, 1022
- Liability of hospital for assault on patient, 565
- Libman, E., notes on systemic infections by the staphylococcus aureus, 733
- Life history of the parasite, 904
  - insurance urinalysis, 37
- Ligature of the artery advisable, 714
- Limitation of non-surgical treatment of intestinal obstruction, 904
- Limitations of the X-ray in the treatment of malignant tumors, the, 193
- Liver, diseases of the, 1079
  - post-operative acute yellow atrophy of the, 696
- Local treatment of dysentery, 997
  - treatment of syphilitic lesions, 513
- Loewenthal, M., hydragogin—some observations upon its use in diseases of the heart, and kidneys, 785
- Long, Eli H., poisoning by corrosives, 1201
- Longevity and medical society interest, 843
- Long prolonged ascites, 951
- Loomis sanatorium, 1219
- Loth, Wm. P., the therapeutic use of suprarenal gland in certain diseases of the skin, 1023
- Louisville Academy of Medicine, 1189
- Loving cup for Dr. Peabody, 941
- Low death rate for 1902, 83
- Luckett, W. H., the rational treatment of tetanus: a report of successful treatment by spinal subarachnoid injections of antitetanic serum, 730
- Luetic arthritis, 911, 993
- Lumbar puncture in chronic neuralgia secondary to zona, 511
- Lung, knife blade removed from, 697
- Lung surgery; historical and experimental, 683
- Lupus erythematosus, 25, 329
  - the X-ray and Finsen light in the treatment of, 1181
  - vulgaris, a case of, 327
  - vulgaris, treatment of, 55
- Lying-in hospital, the, 1087
  - institutions are exempted from drastic regulations, 1037
- Lymphadenoma with recurrent fever, 409
- Lymph gland enlargement and jaundice, 1005
- Lymphatic and connective tissue, relations between, 316
- Lymphatic system and the tonsil, the, 612

- MADRID bull-fight, the, 1193
- Major hysteria (?), 617
  - surgery of the kidneys; with a report of cases, 673
- Making doctors by act of Parliament in Quebec, 708, 944
- Malaria, 859
  - and carcinoma, 85
  - and syphilis, 28
  - anemia and uncinariasis, 995
  - dysentery, 996
  - "esanofele bileris" in, 513
  - fever, 859
  - vertigo, 645
- Malignancy of joint tuberculosis, the, 264
- Malignant tumors of kidney, 860
  - tumors, the limitations of the X-ray in the treatment of, 193
- Malta fever, 694
- Mammary extract for regulating the menstrual flow, 86
- Management of difficult breech presentations, 648
- Mandible, report of a case of one-sided dislocation of the, reduced by a novel manipulation, 689
- Manhattan Dermatological Society, 222, 416, 611, 799, 1035
- Marie Antoinette and some medical history, 40
- Maritime Medical Association, 895
- Marked case of exophthalmic goiter, 330
- Maryland Medical and Chirurgical Faculty, 987
- Masking of symptoms, 1006
- Massage, 30
  - of the neck for insomnia, 266
  - of the prostate in gonorrhea, 979
- Maternity hospital, new, 1218
- Mattison, J. B., narcotic abuse and the public weal, 638
- Maxilla, excision of the superior, under medullary narcosis, 697
- Maxson, Edwin R., is any diseased condition necessarily self-limited? 207
- Mayor Ashbridge congratulated by Philadelphia hospital board, 707
- Meat infections, 620
- Means of obtaining a watery preparation of menthol, a, 410
- Mechanism of mental states encountered in alcoholic insanity, 580
- Meckel's diverticulum, 717
  - diverticulum, strangulated, peritonitis due to, 1088
- Medal for Baltimore Board of Health, 86
- Mediastinum, posterior, surgery of the, 1099
- Medical and Chirurgical Faculty of Maryland, the, 377, 808
  - Association of the Greater City of New York, the, 713
  - college for women in China, 758
  - department instruction, 944
  - education advancement, 899
  - education in the United States, 865
  - inspection of schools, 97
  - inspection of schools in Montreal, 660
  - instruction to railroad employes, 322
  - journal club, of Baltimore, 274
  - journalism, 657
  - legislation and the female, 321
  - libraries, 1035
  - Licensing Board questions, 1032
  - men, petty-minded, 1183
  - progress and disease, social conditions in America in their relation to, 868
  - school inspection, New York City, 229
  - schools, the elective system of, 489
  - secret, the professional discretion, 1009, 1066
  - Society of Nova Scotia, 895
  - Society of the Missouri Valley, 326
  - Society of The State of New York, 178, 219, 228, 274
  - Society of the State of New York, report of the committee on conference of the, 241
  - therapeutics, some recent advances in, 931
- Medicinal treatment (for constipation), 863
- Medicine as a career, 614
- Medico-Chirurgical hospital damaged by explosion, 372
- Meeting American Medical Association, New Orleans, La., 566
  - of Illinois nurses, 986
  - of the Board of Trustees of the American Medical Association, 467
  - of the Maryland Medical Faculty, 896
- Membranous croup, cast from a case of, 1207
- Memorial of Dr. Packard, 35
- Meningitis, fibrinopurulent cerebrospinal from Pfeiffer's bacillus, 1084
- Mental diseases; serotherapy in, 266
  - symptoms and neurasthenia, 1085
- Mercy hospital extension, 1037
- Mesotan in rheumatism, 365
- Metabolism, respiratory, 309
- Metallic systolic râles, 1078
  - tin as a vermifuge, 602
- Methemoglobinemia due to acetanilid, 72
- Method of determining the internal dimensions, configuration and inclination of the female pelvis, a 613
  - of infection, 996
  - of staining sputum for bacteriological examination, a, 216
  - of sterilizing catheters, boiling as a, 56
  - of using argyrol, 172
- Methods of instruction in surgical pathology, lantern slide illustration, 1048
  - which render drugs more palatable, 1084
- Methyl-alcohol, toxicity of, 30
- Methylene blue and quinine in the treatment of malarial fever, 39
  - blue in enterocolitis, 410
- Metritis, 857
- Meyer, Willy, appendicostomy (Weir) for the treatment of chronic ulcerous colitis, 1203
- Micrococcus of acute rheumatism, 795
- Microscope, new, in Germany, 1223
- Microscopical diagnosis of intestinal parasites, 993
- Microscopic anatomy of the pancreas, 946
- Middle ear, suppuration of the; the etiology, pathology and symptomatology of, 105
- Migrane, treatment of, 980
- Migration of typhoid fever, 945
- Mikulicz in Chicago, 894
- Miliary tuberculosis, lucemia and, 215
- Milk and infection, 232
  - and meat inspection, new rules for, 1187
  - ordinance, 1221
- Milk, problem to solve the, 1221
  - and typhoid, 1040
  - for the poor, 893
- Million to fight tuberculosis, a, 123
- Mills, Walter Sands, tonsillitis classified as an infectious disease, 158
- Missed diagnoses of typhoid, 998
- Mississippi Valley Blue Book, 227
- Missouri State Medical Association, 661
- Misuse of the word lorgnette, 761
- Moan of the straggler, the (editorial), 1087
- Modern black hole of Calcutta, a, 843
  - popular anatomy, 127
- Mole, a case of vascular, 701
- Monoplegic disturbances of sensibility in cortical paralyses, 306
- Montgomery, Douglass W., leucoplasia in secondary syphilis, 1126
- Montreal doctors in the pulpits, 1090
  - General Hospital, 84, 180
  - physicians to speak in churches, 660
- Morbid anatomy and pathology of tabes, the, 1121
- More frequent diseases of the joints, the, 65
- Morphine in uremic convulsions, 513
- Morphinism, hyoscine in the treatment of, 405
  - treatment of, 1079
- Morrow, Prince A., professional discretion; the medical secret, 1009, 1066
- Mortality after operations, 239
  - during April, 943
  - in appendicitis, the; its cause and limitation, 833
  - in pelvic operations, 362
  - in pertussis, 645
  - of infantile typhoid, 711
  - of radical operations, 861
  - statistics, 943
- Mosquito question, the, the sanitary aspect of, 447
  - warfare, 1042
- Most prevalent eye diseases among children, 37
- Motor disorders, re-education in, 1099
- Mountain fever and typhoid, 903
- Mount Sinai hospital, 755
- Mouse baiting, 108
- Mouth infection, 271
- Moynihan, B. G. A., the surgery of the simple diseases of the stomach, 1057
- Mucomembranous colitis and appendicitis, 993
  - enterocolitis treated with methylene blue, 364
- Müller, Frederick, to locate in Chicago, 659
- Multiple exostoses, 378
  - fibromata confined to the internal plantar nerve, 272
  - intra-abdominal cysts, 858
  - myeloma of bone, 505
  - neuritis probably gonorrheal in origin, 124
  - osteomyelitis, 907
  - sclerosis, case of, 808
- Municipal civil service examiners, 123
  - hospital bill signed by mayor, 83
- Murphy, J. B., the diagnosis of gall-stones, 825
- Muscle tone and the reflexes, 709
  - tonus and tendon phenomena; their relationship and interpretation, 618
- Muscular dystrophies, the, 858
- Museum jar with improved device for sealing and labeling, 611
- Mycosis vaginæ, note upon a case of, 1204
- Myeloma of bone, multiple, 505
- Myocarditis, segmentary, 72
- Myoma, large, gangrene and spontaneous elimination of a large, 27
  - of the ovary, 168
- Myomectomy or hysterectomy, 1007
- Myositis ossificans traumatica, 1047
- Myxedema, a case of, 1096
- McGill graduates in British Columbia, 419
  - students decorate the monument of Queen Victoria, 226
  - students in New York, 325
- McGill's new gymnasium, 180
- McKernon, James F., the treatment of chronic suppuration of the middle ear, 115
- McLane, the resignation of Dr., 1085, 1088

- NAIL disease, clinical study of, 25
- Nancrede, C. B., and Hutchings, W. H., boiling as a method of sterilizing catheters, 56
- Narcotic abuse and the public weal, 638
- Nasal intubation (soft rubber) for relief of dyspnea due to acute nasopharyngeal swelling in infants, 1097
- National Confederation of State Medical Examining and Licensing Boards, 897

National incorporation, 902
  Sanatorium Association, 38
Nature and treatment of pterygia, 29
  of hydrosalpinx, the, 700
Nature's protective mechanism, 1006
Navy in need of young surgeons, 708
Necessity for more care in the treatment of skull fractures, 999
  for operation, 1006
Neck, massage of the, for insomnia, 266
Necrosis, bone, new germ causing, 28
Need for a nervous hospital in New York City, the, 415
  of interest in medical history, 560
  of public toilets in American cities, 1153
Needle holders, 646
Negro problem, the, 568
  supremacy from a medical standpoint, 414
Nephrectomy for calculus, 134, 570
  for carcinoma, 134
  for hydronephrosis and ureteral stricture, 134
  for malignant tumor, 463
  for rupture of kidney, 135
  for the removal of calculus, 136
  for tuberculosis, 134
  pregnancy following, 1177
Nephritis, as to prognosis in, 795
  dangers of an exclusive diet in, 1212
  in a four-year-old boy having only one kidney, 1049
  in infants, postimpstiginous, 645
Nephrolithotomy, case of, 570
Nephropexy in a case of chronic nephritis, 372
Nephrorrhaphy in intermittent hydronephrosis, 884
Nephrotomy for anuria, 558
Nephrotoxins, the, 1051
Nephro-ureterectomy, complete, 1213
Nerve cells and snake venom, 313
  implantation, 1174
  of the aorta, the depressor nerve as reflex, 312
  suture and nerve degeneration, 1173
Nerves, peripheral, changes in, produced by toxic substances, 702
Neurasthenia and disturbances of speech, 857
  and its treatment, 307
Neuritis following Ludwig's angina, 1210
Neurological hospital, a plea for a, in New York, 195
Neuropathy, urinary, 25
New and unusual therapeutic applications of ergot, 842
  appointment, 370
  bacillus of angina, a, 314
  beds at the ruptured and crippled, 562
  buildings for the university hospital (Columbian), Washington, 468
  clinic at the polyclinic, 82
  Cook county hospital staff, 84
  County hospital wards, 1037
  device for providing aseptic thermometers, 1142
  disease, a, 981
  differential stain for the bacillus diphtheriæ, a, 510
  fresh air farm, 896
  germ causing bone necrosis, 28
  hospital, 273
  hospital ordinance, the, 1187
  hospital site, 1138
  hospital at Cambridge, Md., 468
  hospital for Frankford, 658
  Jersey State medical examiners, 759
  journal of pediatrics, a, 85
  medical practice act, 565
  members of Royal college, 38
  method for imbedding tissues, 1133
  method of correcting flexion deformity at the knee, a, 282
  method of excision of the head of the femur, 508
  method of percussion of the spleen in infants, a, 263
  method of resuscitation, a, 27
  method of treating fractured femur, a, 695
  operation for varicocele, a, 791
  ordinances, 706
  parasite, a new intestinal, 1100
  plastic method of hypospadias, 45
  professors at Columbia University's medical department, 893
  religio-medici, a, 41
  Rockefeller institute for preventive medicine, 321
  St. Francis hospital, the, 893
  site for the Manhattan Eye and Ear Hospital, 610
  sputum slide, a, 351
  stain for diphtheria bacilli, 78
  State asylum, 271
New superintendent for Mt. Sinai hospital, 321
  symptom in the diagnosis of arteriosclerosis, 991
  technic, 283
  treatment of varicose ulcer, 73
  use for thyroid extract, a, 385
  western sanitarium, a, 227
New York Academy of Medicine, 237, 382
  Academy of Medicine—G.-U. surgery section, 570 622
  Academy of Medicine—Orthopedic section, 234, 670, 1148
  Academy of Medicine—Pediatric section, 711
  City mosquito extermination in, 438
  insane, 759
  Neurological Society, 330, 477, 616
  Pathological Society, 664, 764, 1146
  prison, 177
  State Medical Society, 222
New York's kindergarten of crime, 1137
New Zealand as a health resort, 316
Next question in surgery, the, 940
Niger delta, aseptic surgery on the, 403
Nightingale, Florence, in her old age, 1141
Noisy shoulder, 138
Nomenclature of malaria, 410
Non-absorbent gauze the proper material for tamponage, in uterine hemorrhage, 1003
  -malignant diseases of the stomach, surgical treatment in, 485
  medicinal treatment of constipation, 861, 1130
  -septic cerebritis, 477
  -specific urethritis, lavage under pressure of the urethra in, 26
Norbury, Frank Parsons, spinal cord injury, so-called concussion of the cord, 782
Normal number of leucocytes, 621
  saline solution in the production of diuresis, the specific action of, 22
Norristown hospital wins, 847
North Branch Phila. County Medical Society, 189, 809
Northwest Medical Society of Philadelphia, 285, 334, 811, 1230
Note on the occurrence of gall-stones in insane woman, 1055
Notes on blood pressure in man, 926
  on plague as observed in Sydney, New South Wales, 125
  on systemic infections by the staphylococcus aureus, 733
  on the selection of a climate for the treatment of tuberculosis, 575
No uric acid diathesis, 1044
Nucleins in therapeutics, the, 319
Nurses desert a hospital, 465
Nutritional disease of the arteries, 185
Nutritive disturbances, dependence of skin affections upon, 25

OBITUARY—
  Armstrong, Dr. Leon H., 1189
  Atwater, Dr. Albert Waring, 128
  Ayres, Dr. Chauncey, 763
  Beers, Dr. George, 566
  Bitting, Dr. John A., 1038
  Borgono, Dr. Manuel Barros, 566
  Brady, Dr. Frederick L., 35
  Bridgland, Dr. Samuel, 944
  Browning, Dr. John Hammell Brower, 566
  Burdett, Dr. John B., 1038
  Chamberlain, Dr. Dwight S., 945
  Church, Dr. A. W., 566
  Cotton, Dr. R. B., 944
  Davis, Dr. W. E. B., 468
  Day, Dr. Henry W., 181
  deBowes, Dr. Thomas N., 328
  de la Granja, Dr. Edward, 945
  Dickerman, Dr. Edward T., 226
  Everett, Dr. Edward H., 1189
  Everts, Dr. O., 1225
  Fraser, Dr. A. S., 181
  Gardner, Dr. Franklin A., 375
  Gegenbauer, Dr. Carl, 1189
  Gifford, Dr. Harry, 468
  Goldsmith, Dr. R. H., 181
  Gordon, Dr. D. Gilbert, 660
  Halliday, Dr. Andrew, 661
  Harding, Dr. William Stenning, 38
  Homans, Dr. John, 328
  Hopkins, Dr. C. W., 85
  Hunt, Dr. Florence, 1090
  James, Dr. Bushrod W., 124
  Jeancon, Dr. John Allard, 128
  Kohl, Dr. Julius, 87
  Love, Dr. I. N., 1186
  Maclean, Dr. Caird Ryerson, 419
  Mason, Dr. R. Osgood, 945
  Miller, Dr. Guy Bryan, 709
  Morton, Dr. Thomas G., 985
  Munn, Dr. Wm. P., 566

OBITUARY—
  McDonnell, Dr. A. C., 85
  McKaye, Dr. W. S., 181
  McPhail, Dr. Colin, 85
  Newton, Robert Safford, 661
  Ohr, Dr. Charles H., 468
  Pray, Dr. Susan R., 178
  Ridge, Dr. James M., 375
  Richter, Dr. Henry W., 468
  Roache, Dr. James Aloysius, 894
  Scott, Dr. Archibald Young, 85
  Sherman, Dr. Franklin A., 850
  Smith, Dr. William F., 763
  Stowe, Dr. Emily Howard Jennings, 896
  Tagert, Dr. A. T., 1142
  Thomas, Dr. T. Gaillard, 468, 756, 799
  Valentine, Dr. J. Frank, 328
  Van Harlingin, Dr. John, 987
  Washburn, Dr. Nathaniel P., 1225
  Willits, Dr. Mary, 36
  Winslow, Dr. Rush., 375
  Woolworth, Dr. Earle E., 326
  Wyckoff, Dr. Albert, 763
  Wyman, Dr. Morrill, 375
Objection to test, 895
Obligatory disinfection after death from tuberculosis, 1034
  reports of phthisis under Ferdinand II. of Spain, 896
  report of tuberculosis, 860
Observations in American climates and localities in the treatment of pulmonary tuberculosis, 552
  on the surgery of the kidney, some, 1101
  on cerebral localization, 265
Obstetrical Society of Philadelphia, 92, 131
Obstipation, causative factors of, 1179
Obstructive suppression of urine, 287
Occipitoposterior positions of the presenting head, management of, 1178
Ochriasis, 1080
Ochsner, A. J., the mortality in appendicitis, its cause and limitation, 833
Ocular paralysis, postdiphtheritic, 295
Odell's "charity" grabs, 846
O'Dwyer intubation instruments, 1097
Oldest physician in France, 1141
Offer of hospital site, 468
Officers of the A. M. A., 945
  of the Chicago Ophthalmological and Otological Society, 373
  of the Chicago Society of Internal Medicine, 224
  of County Medical Society, 271
  of New York County Medical Association, 799
  of Pediatric Society, 178
  of the Physicians' club, 1139
Ogden, J. Bergen, the significance of oxaluria, 629
Olive-oil for ulcer of the stomach, 69
One-sided dislocation of the mandible, report of a case of. Reduced by a novel manipulation, 689
Once again the "fish" theory of leprosy, 1141
On septic phlebitis of the roots of the portal vein and on pylophlebitis, together with some remarks on the so-called peritoneal sepsis, 954
Ontario board of health, 1090
  Medical Association, 660
  to have a hospital for epileptics, 895
On the labia urethræ and Skene's glands, 281
  the local action of trichloracetic acid, 172
  the need of radical reform in our methods of teaching senior students, 49
  the need of radical reform in teaching of medicine to senior students, 94
  the permanent care of the feeble-minded, 650
  the resemblances of malignant endocarditis to typhoid and paratyphoid infections, 877
  the role of the spleen in the hemolytic function, 311
  transplantation of tumors, 840
Opdyke, Ralph, eye affections complicating and resulting from rheumatism, 690
Open-air treatment of syphilis, 652
Open appendix, 332
Operation, an original, for gastroptosis, 604
  for retroflexio uteri mobilis, 857
  for the relief of gastroptosis, 354
  on the palate, 859
  without direct application of the fingers, 558

- Operations for tic douloureux, subdural interposition of rubber tissue without removal of the Gasserian ganglion in, 356
  - on the gall-bladder, 905
  - upon the appendages for sterility, 170
  - upon the stomach with special reference to the peritoneum, 954
  - upon the uterosacral and round ligaments for retroversion of the uterus, 910
  - upon the vas, 276
- Operative asepsis, 508
  - interference in epilepsy, 305
  - reductions of old dislocations of the elbow, the, 1048
  - treatment, 715
  - treatment of cutaneous tuberculosis, 858
  - treatment of exophthalmic goiter, 1000
  - treatment of fracture of the patella, the, 592
  - treatment of goiter, 697
  - treatment of pulmonary tuberculosis, 75
- Ophthalmia, gonorrheal, 26
- Opium traffic, the, 1141
- Opposition of opinions as to parasites, 959
- Orbital cellulitis following scarlatina, 1088
- Ordinance concerning dogs, the, 753
- Ordinary causes of cyanosis, 952
  - soap in sweating of the feet, 25
- Organism of dermatitis and coccidioides, 510
- Organization by cities and counties in the campaign against tuberculosis, 121
  - of a new school for nurses, 374
- Origin of casts, 1100
  - of fatty changes in the organism, the, 841
  - of lymphocytes, 951
  - of plague, 1042
  - of the eosinophiles and their diagnostic and prognostic importance, the, 1117
- Orthoform in the diagnosis of gastric ulcer, 213
- Orthostatic albuminuria with the report of a case, 188
- Osborne, O. T., the significance of variations in the internal secretions, 625
- Osler, William, on the need of radical reform in our methods of teaching senior students, 49
- Ossiculectomy, 389
- Osteo-arthropathy, pulmonary, in a three-year-old child, 1096
- Osteomyelitis, 907
  - early diagnosis of, 1184
- Osteopaths fail to gain recognition, 756
- Osteopathy bill vetoed by Governor Yates, 1089
- Osteoplastic amputations of the knee, 1128
- Osteopsathyrosis, 604
- Other diagnostic signs, 284
  - points of entrance for plague, 1042
  - silver salts, 230
- Otitis media, chronic purulent, 110
- Otology, beer-yeast in, 29
- Our Berlin letter, 989
  - London letter, 89, 128
  - methods of teaching senior students on the need of radical reform in, 49
  - Paris letter, 38
  - Vienna letter, 521, 662
- Ovary, myoma of the, 168
- Oxaluria, the significance of, 629
- Oxidase and lipase in milk, 311
- Oxygen and alkalies, 473
  - and muscle metabolism, 312
- Ozena in nurslings, 654

- PACKING of abscesses, 620
- Pain, intermenstrual, 68
- Palsies, birth, 1144
- Paludism and its transmission, 860
- Panama canal hygiene, 237
- Pancreas in venous cirrhosis of the liver, the, 509
- Pancreatic cysts, surgical treatment of, 602
  - inflammations, anomalous, 948
- Pancreatitis, acute, relation of cholelithiasis to, 1213
- Paper not surgical, the, 863
- Papilla of bladder, 718
- Papilloma of bladder, 621
- Paradoxical pseudohypertrophy following infantile cerebral hemiplegia, 72
  - pseudohypertrophy in infantile cerebral hemiplegia, 477
- Paraffin injections, 507
  - in surgery, 269
  - in umbilical hernia, 911
- Paralysis, postdiphtheritic, 296
  - and psychoses, treatment of progressive, 694
- Parasite bodies in smallpox, 959
- Parasites of smallpox and chickenpox, 602
- Parasitic tumors, artificial development of, 313
- Parasitism in tumors, 854
- Parasyphilitic diseases, 861
- Paresis and pregnancy, 1084
- Park, Roswell, a report upon the physics and therapeutic value of cathode and ultra-violet rays; with references to the electromagnetic theory of light. An attempt to more clearly define the general character of these recently introduced agents in the treatment of cancer, 1014
- Park, Wm. H., and Payne, Wm., A., the results of intravenous injections of dilute formalin solution in septicemic rabbits, 639
- Parkinson's disease, anatomical and histological changes of the nervous system in, 266
- Paronychia, or run-round; an operation for, 680
- Parotitis following celiotomy, 357
- Paroxysmal hematinuria, 1052
  - tachycardia, 410
- Parturition, post-mortem, 698
- Passing of chronic rheumatism, 1044
- Pasteur institute, to, 708
- Pasteurized and sterilized milk as a cause of rickets and scurvy, 359
- Patellar fracture, treatment of, 695
- Pathogenesis of cardiac arhythmia, 992
  - of delirium in infectious disease, 650
  - of hydronephrosis, 505
  - of leucemia, 314
- Pathological conditions in prehistoric skulls, 842
  - lesions, 951
  - specimens from two cases of aneurism, 378
- Pathologist at Craig Colony, 1138
- Pathology, 955
  - and treatment of tardy postoperative intestinal obstruction with a report of cases, the, 1048
  - of Adams-Stokes disease, 313
  - of amebic dysentery, 996
  - of arthritis deformans, 1044
  - of nerve cells in typhoid and diphtheritis, 796
  - of ossifying myositis, the, 518
  - of the pancreas, 947
  - of the tissue changes induced by X-rays, 218
  - of thyroid and parathyroid glands, 1098
- Pavilion for the deaf, 941
- Peculiar spina bifida, 284
- Pelade of dental origin, 890
- Peliosis rheumatica in children, 358
- Pellagra, 692
- Pelvic abscess and leucocytosis, 620
  - operations, mortality in, 362
  - suppuration in the female, 47, 1072
- Penetration through the skin, 995
- Pension that should be granted, a, 181
- Pennsylvania hospital, 943
  - society for the prevention of tuberculosis, 756
- Peptic ulcer of jejunum, 955, 957
- Percentage physiology, 799
- Percussion of the spleen, a new method of, in infants, 263
- Perforated gastric and duodenal ulcers, 714
- Perforating typhoid ulcer, 601
- Perforation in typhoid fever, 36
  - of the colon; operation; recovery, 380
- Perforations, gastro-intestinal, and their diagnosis, 792
- Pericardium, adherent, remarks upon, 403
- Periduodenal abscess, 274
  - abscess secondary to the ulcer of the duodenum, 433
- Periods of growth, 858
- Peripheral nerves, changes in, produced by toxic substances, 702
- Perirenal fatty tissue, 514
- Perithelioma of kidney with necrosis, 330
- Peritonitis due to strangulated Meckel's diverticulum, 1088
  - in typhoid fever, 1079
  - traumatic, 74
  - tuberculous, 357
- Permanent hemianopsia following eclampsia, 317
- Permeability of the Berkefeld filter, 314
- Permeable urachus, 860
- Pernicious anemia, a case of progressive, 212
- Persistent jaundice, 644
- Personal, 180
- PERSONAL—
  - Badgerow, Dr. George W., 1091
  - Baines, Dr. Allen, 1091
  - Campbell, Dr. Colin C., 708, 1091
  - Weir, Dr. Edmund G., 1091
  - equation in the medical profession, the, 1088
  - experience in operations upon diabetic patients, 1056
  - investigation, 238
  - record of the surgery of the stomach, 956
- Pertussis, mortality in, 645
  - the viscosity of sputum and its relation to, 214
- Peter, Luther C., postdiphtheritic paralysis affecting the general nervous system, 296
- Pettey, George E., hyoscine in the treatment of morphinism; its office and value, 405
- Petty-minded medical men? 1183
- Pharyngolaryngectomy, 1102
- Pharmacology, chief of division of, 1188
- Philadelphia Academy of Surgery, 984
  - health board, campaign of the reorganized, 1139
  - free to accept Phipps gift, 271
  - hospital head nurse resigns, 611
  - hospital staff, 82
  - Medical Club, 271
  - Obstetrical Society, 281, 1102, 1144
- Philadelphia's charities, 83
- Philippine opium traffic, 1091
- Phillips, Wendell C., treatment of acute suppuration of the middle ear, 108
- Phipps institute opened, 322
- Phloridzin, renal damage and, 26
- Phototherapy, 848
- Phthisis, pulmonary, mixed infections in, 1180
- Physics in medicine, rising importance of, 1135
- Physicians' Club of Chicago, the, 522
  - duty, the, 994
  - of transatlantic steamship companies, 896
- Physician almost completes century, 273
  - three times president of a republic, a, 520
- Physicotherapy, its indications and its advantages, 856
- Physiological action of X-rays, 190
  - economy in nutrition, 1188
  - observations in a balloon, 77
  - observations on a crustacean heart, 596, 544
  - salt solution, 484
- Physiology and therapeutics of hypnotics and narcotics, 856
- Physios of the X-rays, the, 807
- Pyemia, streptothrix, 510
- Pilocarpine in scarlet fever, 654
- Pilgrim, Maurice F., a consideration of the scientific application of mechanical vibratory stimulation in the treatment of disease, 154
- Pirkner, F., experiments with a new quinine derivative, 258
- Pituitary body, gangrenous destruction of, 693
- Placenta previa, treatment of, 699
- Plague at Mazatlan, 848
  - in India, the, 896
  - is spreading, 520
- Plan for pure milk, 1089
- Plans for new municipal hospital, 372
  - of the Rockefeller institute, 417
- Plasmodiophoræ brassicæ, 286
- Plaster of Paris, dextrine in, 798
- Plastic linitis, Brinton's, 214
- Pleurisy, pulsating serous, 1099
- Pneumatic bulbs for aseptic hypodermic injection, 856
  - suit, Crile's, 1196
- Pneumococci, virulent, a convenient method of growing and storing, 1147
- Pneumococcus septicemia, 659
  - infection in both tunicæ vaginales, with metastatic infection of Retzius' space, 572
- Pneumonia, 943
  - an infectious disease, 550
  - erratic in children, 284
  - fibrinous, treatment of, with betol, 794
  - in infants treated with antipneumococcic serum, a report of eight cases of, 1096
  - interstitial, 511
- Pneumonia's increasing victims, 656
- Poisoning by the castor-oil bean, 809
- Polyarthritis, Still's type of chronic deforming, 1097
- Polyclinic appointments, 465
  - celebrates twentieth year, 178
- Polycythemia with chronic cyanosis, 1038

- Polyhydramnios, 171
- Polymazia, 125
- Pooley, Thomas R., affections of the labyrinth resulting from general and organic disease, 197
- Portions of stomach tube removed by gastrotomy, 188
- Position of gall-bladder, 238
- Possibility of prevention of plague, 1043
- Possible bad results from valvotomy, 863
  - plague in Topeka, Kansas, 730
- Postoperative management of intranasal surgery, 172
- Postdiphtheritic ocular paralysis, 295
  - paralysis affecting the ear and throat, 300
  - paralysis affecting the general nervous system, 296
- Posterior presentation, the mechanism of, 460
- Postimpetiginous nephritis in infants, 645
- Post-mortem parturition, 698
- Postoperative acute yellow atrophy of the liver, 696
  - ventral hernia, 351
- Posttyphoid fever, 948
- Postvaricolic osseous complications, 692
- Potassium cyanide and unfertilized eggs, 174
- Pott's disease, 670
  - disease,—sarcoma, 1151
- Practical aspects of arteriosclerosis, 267
  - instructions, 43
  - tests, 231
- Predisposing factors, 996
- Predisposition, 945
- Pregnancy and labor complicated by myomata, 1007
  - celiotomy during 699
  - extra-uterine, 27, 168, 647, 1179
  - in women less than sixteen years old, 461
  - paresis and, 1084
- Preliminary communication on the etiology of variola, 987
  - education, 898
  - report on the venous hum in relation to the state of the blood, the, 540
- Preparation for the operation, 472
  - of the patient for anesthesia, 658
  - of the patient for nose and throat operations under local anesthesia, 334
- Presentation of cases, 382
- Present status of biliary surgery, 239
- Presumption against typhoid in New York, 712
- Prevalence of scarlet fever at Lake Forest, 612
  - of smallpox, 373
  - of venereal disease, 901
- Prevention and cure of tuberculosis, the, 707
  - of postoperative ventral hernia, 695
  - of spread, 995
  - of summer diarrhea, 173
- Preventive medicine, the medical inspection of schools, a problem in, 160
- Previous employment of formalin, 474
- Primary cancer of the hepatic duct, 71
  - carcinoma of the appendix, 276
  - carcinoma of the vulva, 1054
  - retroperitoneal solid tumors, 697
  - tuberculosis of the breast, 1130
  - tuberculosis of the ear followed by mastoiditis, 501
- Principles of infant feeding as based on the evolution of mammals, 1095
- Prize of $1,000 for Dr. Sabin, 849
- Probable nature and life-cycle of the yellow fever germ, 1134
  - case of Hodgkin's disease, a, 564
- Problem in preventive medicine, 97
- Professional discretion, the medial secret, 1009, 1066
  - ethics, 1089
- Professor Lorenz of Cornell, 34
- Prognosis and treatment, 279
  - in tuberculosis, 645
  - of malignant growths, 1005
  - of obstruction from Meckel's diverticulum, 717
- Prognostic significance of albumin in the urine, the, 637
  - value of the diazo-reaction in pulmonary tuberculosis, the, 476, 631
- Program of tours of the International Medical Congress, 521
- Progressive pernicious anemia, a case of, 212
- Progress of gall-bladder surgery, 1004
- Prolapse of the female urethra, 605
- Prolapsus uteri, 1082
- Prompt operation in the beginning of the attack will save nearly all cases of appendicitis, 838
- Proper drainage of tears, 171
  - method of cleansing the teeth, 272
- Prophylactic measures against venereal diseases, especially in the army, 304
- Prophylaxis and treatment, 996
  - in the prevention of the spread of vulvovaginitis in hospital service, the, 1097
  - in tuberculosis in Denmark, 1066
  - in typhoid fever, 998
  - of malaria, 859
  - of plague, 1043
  - of venereal diseases, 900
  - of yellow fever, 1042
- Proposed amendment to the law governing the practice of medicine in Pennsylvania, 223
  - new Bellevue hospital, the, 515
- Prostate, enlarged, 210
- Prostatectomy, 860
  - and galvanocaustic prostotomy, 1047
  - its indications and technic, 324
- Prostatic calculi, with report of a case, 254
- Protection by foreign tubercle bacilli
- Protective role of human saliva, the, 855
- Protect the brain during a craniotomy with the Gigli saw, instrument to, 1130
- Protest against home study of students, 943
- Prothetic apparatus, 716
- Protoplasm and enzyme, 1174
- Pruritis vulvæ and allied conditions, 1215
  - the surgical treatment of, 1131
- Pseudo-diverticulum of the duodenum, 275
  - leucemia, X-ray treatment of, 1131
  - sclerosis, 857
  - -uremia in urinary lithiasis, 993
- Psychiatrical Society of New York, 517
- Psychiatric wards, 229
- Psychiatry as a clinical science, 857
- Psychical influences and reflex secretion, 142
- Psychic disturbances, 275
- Pterygia, nature and treatment of, 29
- Puberty in the girl, 170
- Public bath-house for Camden, 894
  - hospital for Richmond, 984
  - weal, narcotic abuse and the, 638
- Puerperal eclampsia, 287, 460
  - eclampsia, why chloroform should be used in, 24
- Pulmonary syphilis simulating tuberculosis, 211
  - tuberculosis, formalin in, 213
  - tuberculosis, four months' experience with antistreptococcic serum in, 1108
  - tuberculosis, observations on American climates and localities in the treatment of, 552
  - tuberculosis, operative treatment of, 75
  - tuberculosis, the cure of, 1099
  - tuberculosis, the prognostic value of the diazo-reaction in, 631
- Pulsating empyema necessitatis, 1099
  - serous pleurisy, 1099
- "Purin" bodies, determination of, 508
- Purpura, 861
- Pus in the pelvis as a result of bone or joint necrosis, 92
  - in the female pelvis, 1176
  - in the pelvis depending upon and complicating appendiceal disease in the female, methods of treatment, 92
- Putrefaction in the lungs of fetuses without respiration, 461
- Pyloric obstruction, 906

- QUANTITATIVE estimation of albumin in the urine, 1146
- Quinine derivative, experiments with a new, 258
  - means of administering to children, a, 1176

- RABIES, 813
  - and the Bergh Society, 705
- Radical cure of femoral hernia, 858
  - cure of aneurism, 604
  - cure for hypertrophy of the prostate, 860
- Radiography in biliary lithiasis, 992
- Radioscopy in pulmonary tuberculosis, 992
- Radiotherapy, 861
  - in cancer, 652
- Rainear, A. R., the proper recognition of electrotherapeutics, 1161
- Ransom, Charles C., colchicum in the treatment of gout, 1105
- Rational cure of tuberculosis, a, 859
  - treatment of tetanus, the, 730
- Ray bill fails to pass the senate, 800
- Reasons for a special effort to prevent the spread of tuberculosis, 522
- Recent Bellevue charges, 416
- Reception given to Prof. Adolf Lorenz, of Vienna, 234
  - to Dr. Mikulicz, 799
- Recommendations, 899
- Recovery following operation for rupture of the liver, 756
- Recrudescence of malaria, 859
- Rectal feeding, 263
  - injections of antistreptococcus serum, 993
  - surgery, 183
  - valves anatomical, the, 863
- Red cells, agglutinated, thrombi due to, 27
  - -light treatment of smallpox, the, 1080
- Reflex convulsions in growing boys and girls, 650
- Reform in charities, 1086
- Registered nurse bill, the, 610
- Relation between uterine and gastric diseases, the, 699
  - of gynecological and nervous affections, 1007
  - of the bacillus of Shiga to the summer diarrheas, the, 1093
- Relations between lymphatics and connective tissue, 316
  - to exophthalmic goiter, 1098
- Relief of sypmtoms, 140
- Remarks upon adherent pericardium, 403
- Removal of an enlarged spleen, 792
  - of artificial teeth from the alimentary tract, 119
  - of Chinatown, 1141
  - of foreign bodies from the eye, 805
  - of lymph glands, 621
  - of small metallic foreign bodies from the stomach without external operation, 117
  - of vesical papilloma, 460
- Renal defects, congenital unilateral, 697
  - damage and phloridzin, 26
  - decapsulation, 471
  - decapsulation for puerperal eclampsia, 1054
  - decapsulation of chronic Bright's disease, 979
  - massage, effect of, 1078
  - tuberculosis, 224
- Reorganization of Department of Therapeutics at Columbia, 1088
  - of health department, 984
- Repair of cystocele, the, 909
- Repeal of act compelling record of birth and deaths, 418
- Repeated ectopic gestation, 76
- Repetition of Cesarian section on the same patient: the experience of the Boston Lying-in Hospital, 1053
- Report of a case of gangrene of 15 inches of cecum and ilium after an operation for appendicitis, 958
  - of a case of monocular inferior hemianopsia, 784
  - of a case of mucous cyst of the anterior wall of the bladder, simulating stone or pedunculated tumor, 622
  - of a case of one-sided dislocation of the mandible. Reduced by a novel manipulation, 689
  - of a disease in the Philippine Islands clinically resembling glanders, 70
  - of business committee, 902
  - of cases of fracture of the skull, 45
  - of State board of charities, 519
  - of the board of trustees, 902
  - of the committee on conference of the Medical Society of the State of New York, 241
  - of trustees of Bellevue and allied hospitals, 221
  - on bubonic plague, 1141
  - upon the physics and therapeutic value of cathode and ultra-violet rays, a, 1014
- Researches in the antitoxic ions, new, 1083
- Resection of the common bile duct, 646
- Residual urine, 804
- Resignation of Dean Dudley, 1036
  - of Dr. McLane, the, 1085, 1088
  - of Dr. Neely, 1140
- Resolutions on child labor, 373
- Responsibility, the medical, of the lay papers, 1217
- Respiratory diseases, 985
  - embarrassment when mandible is loosened, 322
  - metabolism, 309
- Result of injection, 474
  - of operation upon the right kidney, 1051
  - upon the general health, 1051
- Results, 472
  - of intravenous injections of dilute formalin solution in septicemic rabbits, the, 639, 669
  - of operation for the radical cure of inguinal and femoral hernia with an analysis of 1,000 cases operated upon between 1891-1902, the, 958

- Results of systematic cleansing of the teeth, 272
- Resuscitation, a new method of, 27
  - experiments, 345
- Retention of chlorides, the mechanism of the, 174
- Retinal hemorrhages in fracture of the skull, 979
- Retinitis and chorioretinitis, 529
- Retinoscopy, 230
- Retroversion of the uterus, 910
- Reunion of medical class, 1088
- Reversal of the decision against Dr. Webster, 986
- REVIEWS—
  - Allchin, W. H., a manual of medicine, 143
  - Andrews, Albert H., the practical medicine series of year books, 719
  - Ballin, Milton J., a text-book of the diseases of the ear for students and practitioners, 384
  - Beck, Carl, die Roentgenstrahlenim Dienste der Chirurgie, 192
  - Bennett, Sir William H., lectures on the use of massage in recent fractures, and other common surgical injuries, 1232
  - Blakiston's, P., Son & Co., physicians' visiting list, 144
  - Bryant, J. H., Guy's hospital reports, 719
  - Buck, Albert H., a reference handbook of the medical sciences, 526
  - Burdett, Henry the nursing profession, how and where to train, 768
  - Butler, George F., the isle of content, 239
  - Cammeron, James C., etc., the American text-book of obstetrics, for practitioners and students, 768
  - Carel, H. C., inorganic chemistry syllabus, 720
  - Carless, Albert, manual of surgery for students and practitioners, 1151
  - Cathell, D. W., book on the physician himself and things that concern his reputation and success, 1056
  - Cattell, Henry W., international clinics, 480
  - Cohen, Solomon Solis, a system of physiologic therapeutics, 864
  - Crandall, F. M., progressive medicine, Vol. I, 1056
  - Crocker, H. Radcliffe, diseases of the skin, 672
  - Culbreth, David M. R., a manual of materia medica and pharmacology, 768
  - Curtis, B. Farquhar, the practice of surgery, 1008
  - Eckley, William T., a manual of dissection and practical anatomy, 240
  - Eyre, J. W. H., bacteriological technique, 432
  - Fenwick, Samuel, cancer and other tumors of the stomach, 1151
  - Fenwick, W. Soltan, cancer and other tumors of the stomach, 1151
  - Frazier, C. H., progressive medicine, Vol. I, 1056
  - Frenkel, H. S., the treatment of ataxia by means of systematic exercise, 143
  - Funck, M., manuel de bacteriologie clinique, 1232
  - Gallaudet, Bern B., anatomy, 1200
  - Gallaudet, Bern B., diseases of the skin, 526
  - Gant, Sam'l Goodwin, diseases of the rectum and anus, 191
  - Garrigues, Henry J., a text-book of the science and art of obstetrics, 240
  - Gerrish, Frederic Henry, text-book of anatomy, 144
  - Goadby, Kenneth Weldon, the mycology of the mouth, 1008
  - Gould, A. Pearce, the international text-book of surgery, 720
  - Gould, Geo. M., biographic clinics, 527, 1056
  - Gould, George M., the American year-book of medicine and surgery, 528, 960
  - Grayson, Chas. Prevost, the diseases of the nose, throat and ears, 143
  - Grindon, Joseph, diseases of the skin, 526
  - Groff, John E., materia medica for nurses, 960
  - Guenther, Augustus E., physiology, 816
  - Guenther, Theodore C., physiology, 816
  - Hardie, T. Melville, the practical medicine series of year books, 719
- REVIEWS—
  - Harris, Norman MacLeod, manual of bacteriology, 767
  - Hatfield, Marcus P., a compend of diseases of children, 863
  - Hektoen, L., progressive medicine, Vol. I, 1056
  - Heller, Clarence L., a text-book of the diseases of the ear for students and practitioners, 384
  - Herrick, J. B., progressive medicine, Vol. I, 1056
  - Hime, Maurice C., "Wild Oats," 1200
  - Hoffmann, August, Pathologie und Therapie der Herzneurosen und der functionellen Kreislaufstörungen, 144
  - Hynson, George B., the practical treatment of stammering and stuttering, 624
  - Jackson, Holmes C., directions for laboratory work and physiological chemistry, 720
  - Jacobi A., therapeutics of infancy and childhood, 672
  - Kelly, A. O. J., international clinics, 1200
  - Kramer, Henry, a course in botany and pharmacognosy, 767
  - Leffmann, Henry, memoranda on poisons, 912
  - Leffmann, Henry, text-book of medical jurisprudence and toxicology, 432
  - Leuf, A. H. P., gynecology—obstetrics—menopause, 240
  - Lewis, George Andrew, the practical treatment of stammering and stuttering, 624
  - Manton, W. P., medical epitome series, the, 1104
  - Mathews, Joseph McDowell, how to succeed in the practice of medicine, 526
  - Medical annual, the International, 1008
  - Möbius, P. J., über das pathologische bei Nietzseche, 672
  - Morris, Henry, human anatomy, 768
  - Moynihan, B. G. A., diseases of the pancreas and their surgical treatment, 525
  - Muir, Robert, manual of bacteriology, 767
  - Murphy, John B., the practical medicine series of year books, 719
  - Myers, Walter, malarial fever, 1104
  - McGrath, John J., surgical anatomy and operative surgery, 1200
  - McMurrich, J. D., the development of the human body, 1056
  - Oertel, T. E., medical microscopy, 527
  - Ohlemann, M., die neueren augenheilmittel für Aerzte und Studierende, 480
  - Oppenheimer, Carl, Biochemisches Centralblatt, 191
  - Pedersen, V. C., medical epitome series, the, 1104
  - Pedersen, V. C., physiology, 816
  - Phillips, R. J., spectacles and eyeglasses, their forms, mounting and proper adjustment, 576
  - Pilgrim, Maurice F., mechanical vibratory stimulation, its theory and application in the treatment of disease, 912
  - Ploenies, Wilhelm, die Reizungen des Nervus Sympaticus und Vagus beim Ulcus Ventriculi, mit besonderer Berücksichtigung iher Bedeutung für Diagnose und Therapie, 960
  - Politzer, Adam, a text-book of the diseases of the ear for students and practitioners, 384
  - Poore, George Vivian, the earth in relation to the preservation and destruction of contagia, 527
  - Potter, Sam'l O. L., a handbook of materia medica, pharmacy and therapeutics, 528
  - Proceedings of the American Medico-Psychological Association, 1151
  - Proceedings of the Charaka Club, the, 525
  - Randolph, R. L., progressive medicine, Vol. I, 1056
  - Reese, John J., text-book of medical jurisprudence and toxicology, 432
  - Ritchie, James, manual of bacteriology, 767
  - Robinson, Beverly, essays on clinical medicine, 1104
  - Robson, A. W. Mayo, diseases of the pancreas and their surgical treatment, 525
- REVIEWS—
  - Rockwell, William H., Jr., anatomy, 1200
  - Rose, William, manual of surgery for students and practitioners, 1151
  - Ross, Ronald, malarial fever, 1104
  - Sajous, Chas. E. deM., internal secretions and the principles of medicine, the, 1104
  - Savage, G. C., ophthalmic myology, 480
  - Schleif, William, materia medica, therapeutics, medical pharmacy, prescription writing and medical Latin, 767
  - Scudder, Charles Locke, the treatment of fractures, 192
  - Senn, Nicholas, a nurse's guide for the operating room, 192
  - Skinner, Clarence Edward, therapeutics of dry hot air, 526
  - Steward, F. J., Guy's hospital reports, 719
  - Tanner, Thomas Hawkes, memoranda on poisons, 912
  - Transactions of the American Climatological Association, 1008
  - Transaction of the American Gynecological Society, 719
  - Tuley, Henry E., obstetrical nursing for nurses and students, 527
  - Turner, A. L., progressive medicine, Vol. I, 1056
  - Tuttle, James P., a treatise on diseases of the anus, rectum and pelvic colon, 864
  - Tyson, James, a guide to the practical examination of urine for the use of physicians and students, 239
  - Von Noorden, Carl, clinical treatises on the pathology and therapy of disorders of metabolism and nutrition, 719, 912, 1104
  - Van Schaick, George G., regional minor surgery, 576
  - Warren, J. Collins, the international text-book of surgery, 720
  - Wharton, Henry R., the practice of surgery, 1008
  - Williams, J. Whitridge, obstetrics, 1199
  - Wood, Casey A., the practical medicine series of year books, 719
- Rheumatism, 992
  - acute, micrococcus of, 795
  - eye affections complicating and resulting from, 690
  - mesotan in, 365
  - the etiology of acute, 644
- Rheumatic fever, surgical interference in, 603
  - tonsillitis in children, 285, 965
- Rheumatoid arthritis, 670, 1045
  - arthritis, treatment of, 514
- Rhinoscleroma, 911
- Richardson, H., functional disorders of the biliary secretion and their treatment, 343
  - Maurice H., indications for extirpation of the gall-bladder, 817
- Rickets and scurvy, Pasteurized and sterilized milk as a cause of, 359
- Ricketts, Benjamin Merrill, lung surgery, historical and experimental, 683
- Ringworm, treatment of, 1181
- Rising importance of physics in medicine, the, 1135
- Roentgen ray, the; its mechanics, physics, physiology and pathology, 744
  - rays, cases illustrating the therapeutic uses of the, 145
- Role of intracellular catalytic processes in the pathogenesis of malignant neoplasms, the, 564
  - of the duodenal mucosa in digestion, 651
- Roof garden opened by Rush hospital, 800
- Roosevelt dispensary, 984
- Route of infection, 238
- Roux's operation for the radical cure of femoral hernia, 356
- Royal physicians and straightforwardness, 614
- Rubber gloves, sterilization of, 791
- Run-round, paronychia, an operation for, 680
- Rupture of the aorta due to carcinoma of the esophagus, 664
  - of the spleen, traumatic, 119
  - of the urinary bladder, 507
  - of the uterus during labor, 699
  - of the uterus with recovery, 648

- SALE of poisons, the, 613
- Salicylate of sodium in glaucoma, 514
- Saline diuresis, 308
  - infusions, the value of, 1078
- Salocreol, 992

- Salol in the treatment of dysentery, 410
- Salt in pathology, 801
  - solution, physiological, 484
  - solution, the use of normal, 788
- Samuel D. Gross prize—$1,200, 418
- Sanatorium to be extended, 35
- Sand filtration has proven successful, 466
- Sanitary experts versus engineers, 1040
- Sanitation and better dwellings, 849
  - and the isthmian canal, 122
- Sapotoxins, hemolytic potency of certain. 314
- Sarcoma and coccidia, 854
- Sarcom-melanin, the origin of, 78
  - of the kidney, 173
  - of the thumb, 1093
  - of the uterine parenchyma, 649
  - -Pott's disease, 1151
- Sarcomatous degeneration of myomata, 1002
- Satterlee, G. Reese, a case of bacteriuria resembling Weil's disease, 1069
- Satterthwaite, Thomas E., some recent advances in medical therapeutics, 931
- Saylor, E. S., report of a case of monocular inferior hemianopsia, 782
- Scale of telephone charges, 847
- Scarlatina, 911
  - bacteriological examination of the blood in, 694
- Scarlet fever, pilocarpine in, 654
  - fever on receiving ship, 941
  - fever with relapse, 70
- School inspectors in Strassburg, 613
- Schuylkill river to be inspected, 1186
  - result of inspection, 1221
- Sciatic nerve, suture of the great, 1132
- Scientific research, 902
- Scientist to be tried again, 941
- Scope of vaginal section, the, 407
  - of the vaginal section, 586, 588
  - of work, 900
- Scopolamin-morphine narcosis, the, 980
- Screen for X-ray work, 514
- Scrofuloderma, 378
- Schwenk, P. N. K., postdiphtheritic ocular paralysis, 295
- Sea-sickness, cure for, 1078
- Second case dubious result, 474
  - international congress of the medical press, 346
- Secondary sexual characters, 312
  - syphilis, leucoplasia in, 1126
  - typhoid manifestations, 949
- Secretion of gastric juice, the effect of morphine on the, 1080
  - on clinical medicine and surgery; Medico-Chirurgical Faculty of Maryland, 186
  - on general medicine, 140
  - on genito-urinary diseases, 134
  - on medicine, 910
  - on obstetrics and diseases of women. 1002
  - on obstetrics and gynecology, 907
  - on orthopedic surgery, 137
  - on pediatrics, 910
  - on practice of medicine, 993, 1040
  - on surgery and anatomy, 905, 998
- Segmentary myocarditis, 72
- Self-accusation and insanity, 522
  - -retaining double retractor for suprapubic cystotomy, a, 622
- Septicemia with unusual symptoms, 1213
- Septicemic rabbits, the results of intravenous injections of dilute formalin solution in, 639
- Septic sewerage, 565
  - synovitis, diagnosis and treatment of, 557
- Septum perforation in chromic acid factories, 318
- Sequestration of the bladder, 381
- Serotherapy in diphtheria, 858
  - in mental diseases, 266
- Serumtherapy against the bacillus of dysentery, 29
  - of typhoid fever in children, 911
- Serum specific for the human placenta, a, 316
  - to counteract morphine poisoning and similar intoxications, a, 218
- Sessile and pedunculated tumors, 622
- Seventh International Congress of Otologists, 758
- Sex and disease, 607
  - determination, 178
- Sexual characters, secondary, 312
  - debility and operative measures, 276
- Shape of the chest in tuberculosis, the, 1081
- Shiga bacillus and secondary infections in yellow fever, the, 1133
- Shock, development and knowledge of, etc., 1195, 1196, 1197
  - produced by general anesthesia, 1130
- Shortening of the round ligament, 39
- Shoulder, anatomical obstacles to the reduction of old dislocations of the, 697
- Should the tuberculous know the truth? 1045
  - the uterus be removed when the ovaries and tubes are removed in cases of double pyosalpinx, when operating either through the abdomen or the vagina? 1054
- Significance of eosinophilia, 233
  - of iodine reaction, 233
  - of itching as a concomitant of disease, and as a cause for disease, the, 334
  - of ordinary symptoms, 1004
  - of oxaluria, 475, 629
  - of variations in the internal secretions, the, 625
- Silver nitrate injections in tuberculosis, 694
  - sulpho-ichthyolate, 080
- Simple method of obtaining blood from the rabbit, a, 1146
  - technic of milk examinations, 232
- Simplicity in the operation for laceration of the cervix uteri, on, 1026
  - of modern surgery, the, 655
- Simplification of the suture in Murphy button work, 117
- Simulate acute rheumatism, 1044
- Simulation of sepsis, 950
- Simultaneous intra-uterine and ectopic pregnancy, 168
- Single ulcer of the urinary bladder, non-tuberculous and non-malignant, 955
- Site being cleared for new Jefferson Hospital, 706
  - for new Manila hospital, 986
- Situation at Ithaca, the, 465
  - in cancer etiology, the, 891
  - in San Francisco, 1043
- Skin affections, dependence of, upon nutritive disturbances, 25
  - lesion of rapid growth, a, 950
- Skull, fracture of the base of the, 918
- Sleeping sickness spreads, 402
- Slow pulse, 278
- Small metallic foreign bodies from the stomach, removal of, without external operation, 117
- Smallpox, 565, 612, 894
  - and chickenpox, parasites of, 602
  - appropriation with which to combat, 1187
  - areas to be located, 1220
  - etiology, 849
  - gaining in Pennsylvania, 1036
  - mismanagement of, 1088
  - the red-light treatment of, 1080
- Smith, Allen J., apparent fetal substitution; medicolegal note, 488
  - Allen J., note on a case of mycosis vaginæ, 1204
  - Andrew H., the young practitioner, 340
  - E. E., laboratory aids in the diagnosis of typhoid fever, 302
  - E. Franklin, a brief review of some of the etiological factors in intestinal dyspepsia, 727
  - John B., the sanitary aspect of the mosquito question, 447
- Snake venom and nerve cells, 313
- Social conditions in America in their relation to medical progress and disease, 868
- Society of Alumni of Bellevue Hospital, 45, 332, 574, 813
  - of medical jurisprudence, 322
- Sodium chloride and the constituents of the urine, 309
  - chloride upon gastric secretion, influence of, 303
- Some contributions to surgery of the gastro-intestinal type, 955
  - experience of the treatment of inoperable malignant disease by means of the X-ray, 958
  - eye disorders in children, 37
  - interesting phenomena of specific immune sera, 974
  - observations concerning the physical characteristics of nutrient gelatin, 658
  - observations on blood-pressure in morbid conditions of adults, 184
  - points in ligation of arteries, 355
  - practical points in the anatomy of the gall-bladder region, 821
  - problems in the major surgery of the kidneys; with a report of cases, 673
  - questions and answers, 897
  - questions relating to acetone, 263
  - recent advances in medical therapeutics, 931
  - tumors comparatively innocuous, 622
  - types of retinitis and chorioretinitis, 529
- Somers, Lewis S., the medical inspection of schools: a problem in preventive medicine, 97, 160
- Soper, Geo. A., mosquito extermination in New York City, 438
- Source of infection of plague, 1042
- Sources and manner of typhoid infection, the, 997
- South Africa, Canadian doctors cannot practise in, 639
- Southern fevers, 903
- Spastic paraplegia, 331
- Special cortical center for writing, 229
  - peculiarities, 276
  - symptoms in child typhoid, 712
- Specific action of normal saline solution in the production of diuresis, the, 22
  - phlebitis, 329
- Spermatic cord, torsion of the, 571
- Sphygmomanometer, the Riva-Rocci, demonstration, etc., of, 1195
- Spina bifida without a sac, a case of, 179
- Spinal cocainization in children, 858
  - anesthesia, 74
  - concussion, so-called, 577
  - cord injury, so-called concussion of the cord, 782
  - disease differentiation, 229
  - tumor, 617
- Spindle-cell sarcoma of the dura cerebelli, 618
- Spine, fracture of the, 961
- Splanchnoptosis, surgical treatment of, 118
- Splenic hypertrophy in infants, 911
  - souffle, 602
- Splenopexy, 1213
- Spondylitis deformans, 1044
- Spontaneous, and gangrene, elimination of a large myoma, 27
  - expulsion of a large vesical calculus by a child, 602
- Sporulation stage, 959
- Spring cleaning, 464
- St. Agnes' hospital to be enlarged, 123
- St. Ann's sanitarium for consumptives, 986
- Stammering, 849
  - report of a case of, and method of treatment, 1211
- Staining of living blood-platelets, the, 1083
- Staphylococcus aureus, notes on systemic infections by the, 733
- Starfish, the ripening, natural death and prolongation of life of the eggs of the, 309
- State board of examiners, 84
  - care of consumptives, 124
  - examinations, 517
  - hospital graft, 755
  - hospitals for consumptives, 84
  - to aid in the suppression of smallpox, 847
  - tuberculosis hospital, 664
- Status of question in different States, 900
- Stegomyia at Baltimore, 246
- Sterilization of rubber gloves, 791
- Sterilized milk and clean milk, 232
- Stewart, D. H., why chloroform should be used in puerperal eclampsia, 24
  - Douglas H., the circulation of puerperal eclampsia, 974
  - John, rheumatic tonsillitis in children, 965
- St. Francis District Medical Association, 180
- St. Mary's free hospital, 321
- Stimulant, adrenalin as a, 212
- Stokes-Adams phenomenon, 279
  - -Adams pulse, 279
- Stolper, Joseph H., the more frequent diseases of the joints: their etiology and treatment, with report of cases, 65
- Stomach, hair balls in the, 315
  - lavage of the, 516
  - surgery, 906
  - surgery of the, 1099
  - the surgery of the simple diseases of the, 1057
  - washing of, 265
- Stone and calculous disorders, geographical distribution of, 603
  - in the kidney symptoms and diagnosis, 1214
- Stone, William Ridgely, the geographic-distribution of uncinariasis in the United States, 680
- Stookey, Lyman Brumbaugh, the influence of sodium chloride upon gastric secretion, 303
- Straggler, the moan of the (editorial), 1087
- Strangulated hernia, an unusual case of, 505
  - hernia in an infant of one month, 506
- Strength, muscular, alcohol and, 899
- Streptococcus and staphylococcus bronchitis, 225
- Strongyloides intestinalis in the United States, 904
- Stroptothrix pyemia, 510
- Study of a bacillus resembling the bacillus of Shiga, a, 289

- Study of eel-serum, 314
  - of incubation period, 1041
  - of 140 cases of locomotor ataxia, tabes dorsalis, a, 7
- Subclavian aneurism, 377
  - triangle, the, 1136
- Subcutaneous injection of olive oil, 374
  - injection of paraffin for deformities of the nose, 1001
- Subdural interposition of rubber tissue without removal of the Gasserian ganglion in operations for tic-douloureux, 356
  - implantation of rubber tissue in operations for inveterate neuralgia of the fifth pair without removal of the Gasserian ganglion, 954
- Subjective and objective symptoms of intestinal injury, 83
- Sublamin, hand disinfection with, 210
  - in treatment of syphilis, 1120
  - toxicity of, 29
- Subphrenic abscess, 275
- Substitution, apparent fetal, 488
  - in medical examinations, 124
- Subways, the air in, 175
- Sudden death in children, 357
  - death of Dr. Carncross, 611
- Successful decapsulation of the kidney, 1051
- Suicides, 467
- Sulphur cream for dandruff, 30
- Summer course College of Physicians and Surgeons, 465
  - courses in Berlin, 1091
  - diarrhea, prevention of, 173
  - home for cripples, 941
- Sunshine and fresh air in the treatment of tuberculosis of bones and joints, 998
- Superior mesenteric artery, embolism of, 73
- Supernumerary breast in the axilla of an adult male, a case of, 21
- Suppression of urine, 905
- Suppurating abdominal wound, the, 1128
- Suppuration, pelvic, in the female, 1072
- Suprapubic cystotomy for tuberculosis of the bladder, followed by nephrectomy, 623
  - cystotomy for tumor of the bladder, with spinal anesthesia, 623
  - cystotomy for stone, with spinal anesthesia, 624
  - drainage in tuberculosis of the bladder, 602
- Suprarenal extract, action of, 606
  - gland, the therapeutic use of, in certain diseases of the skin, 1023
- Suprascrotal operation for varicocele, with ligature of the spermatic artery, 713
- Surgery, aseptic, on the Niger delta, 403
  - of the common bile duct for stone or tumor, 1006
  - of gall-bladder, 696
  - of gastric ulcer, 906
  - modern, the simplicity of, 655
  - paraffin in, 269
  - of the simple diseases of the stomach, 1057
  - of the stomach, 859
  - of the urinary tract in the female, 999
- Surgical intervention in nephritis, 860
  - interference in rheumatic fever, 603
  - treatment in non-malignant diseases of the stomach: results and indications, 485
  - treatment of anuria, the, 1129
  - treatment of birth palsy, the, 982
  - treatment of early diagnosed cancer of the uterus, more especially by hysterectomy, 1054
  - treatment of nephritis, 905
  - treatment of pancreatic cysts, 602
  - treatment of pruritus vulvæ, the, 1131
  - treatment of prostatic hypertrophy, 353
  - treatment of splanchnoptosis, 118
  - treatment of typhoid perforation, 36
  - treatment of uterine cancer, 76
- Susceptibility and resistive vitality, 620
- Suture in Murphy button work, simplification of the, 117
  - of the brachial plexus in birth paralysis, 604
  - of the great sciatic nerve, 1132
- Sutures of arteries, 698
- Sweating of the feet, ordinary soap in, 25
- Swift, Geo. Montague, remarks upon adherent pericardium, 403
- Sympathectomy for exophthalmic goiter, 1046
- Symposium on gall-stone surgery, 238
  - on serpent venom, 223
- Symphyseotomy, 37
  - partial, 1178
- Symptomatology, 714, 956
  - of the pancreas, 947
- Symptoms of antral disease, 860
  - of gall-stones, 238
  - and pathology of chronic ulcer, 956
  - of mucomembranous enterocolitis, 859
- Synopses on some of the renal lesions in infancy, 1049
- Synovial fringes of the knee-joint, hypertrophy of the, 1128
- Syphilis, 37, 325
  - and hydrotherapy, 855
  - and malaria, 28
  - and wet nurses, 1038
  - as a cause of chorea, 519
  - blood changes in, 363
  - blood investigations in, 645
  - immunity in, 601
  - in Italy, 520
  - in the barber shop, 211
  - mixed treatment, 716
  - present ailment, 716
  - results of treatment, 716
  - sublamin in treatment of, 1120
  - the treatment of, 769
- Syphilitic infection of wet-nurses from infants, 227
  - perineuritis, 382
- Syringomyelia, traumatic, 1163
- Systemic blastomycosis, a case of, 1133
  - staphylococcus infection, 766
- Systolic râles, metallic, 1078

- Tabes associated with hemiplegia, 616
  - dorsalis and aortitis, 304
  - dorsalis: a study of 140 cases of locomotor ataxia, 7
  - paralysis agitans combined with, 1173
  - the morbid anatomy and pathology of, 1121
  - the symptomatology of, 491
- Tabetic joint diseases, 265
- Taking castor-oil, 30
- Tamponade, uterovaginal, its obstetrical uses, 1177
- Tampons and drainage, 947
- Tarrytown State hospital, 562
- Tarsalgia among adolescents, 412
- Taste fibers, the, 978
- Teaching phlebotomy, 280
- Tears of the gall-bladder, treatment of perforations and, 210
  - proper drainage of, 171
  - through the vagina during labor, 459
- Technic of cataphoric sterilization in cancer of the cervix uteri, 1003
  - of prostatectomy, 234
- Temperature charts, 239
  - range in ether anesthesia, 312
- Temporary quarters for Phipps institute, 223
- Tendon transplantation, 1151
- Tenement infant feeding, 950
- Tent hospital for consumptives, 1035
- Terminal coma in diabetes, 890
  - increase of myelocytes, 951
- Testicle, ectopic, in the perineum, 1088
- Tests for albuminuria, 509
  - for pancreatic digestion, 947
- Tetanus, 1132
  - blank cartridge wound infected with, 696
  - postoperative, a case of, with especial reference to the focus of infection, 1102
  - serum for, 1099
  - the rational treatment of, 730
- Thalamus, the, 912
- The air in the subways, 175
  - American birthrate, 367
  - army canteen, 122
  - bladder after hysterectomy, 169
  - Canadian hospital tent, 38
  - Carnegie donation to College of Physicians, 223
  - charity organization society, 271
  - circulatory effects of thyroid and the suprarenals, 185
  - clinical value of blood-pressure observations in regulating stimulation, in sick children, 183
  - conditions of action of the pancreatic secretion, 308
  - Craig Colony prize awarded, 270
  - depressor nerve as reflex nerve of the aorta, 312
  - determination of the nitrogenous constituents of the urine with corrosive sublimate, 77
  - diuretic action of rectal irrigation. The specific action of normal saline solution in the production of diuresis, 22
  - effect of blue light, 758
  - effects of removal of the thyroid, 186
  - effect of serpent venom upon the blood, 223
- The effect of sodium chloride and calcium on the conductivity of nerves, 78
  - etiology and classification of general paralysis, 304
  - etiology of colds, 481
  - etiology of dysmenorrhea, 462
  - etiology, pathology and symptomatology of acute suppuration of the middle ear, 105
  - etiology, pathology and symptomatology of chronic purulent otitis media, 110
  - fate of fat in the organism, 313
  - fire escape as a health resort, 230
  - fly as a carrier of typhoid, 467
  - future for the operation, 473
  - future of electrotherapeutics, 366
  - geographic distribution of uncinariasis in the United States, 680
  - gopher ascetics, 42
  - growing historical spirit, 370
  - hanging-drop method, 217
  - Harvard Medical Society of New York City, 42, 282
  - hemolymph glands and spleen, 310
  - *Herald* on health department appropriations, 270
  - hereditary and intra-uterine transmission of agglutinating properties and formation of agglutinins by a fetus, 171
  - histopathological changes in the cerebral cortex of epileptics, 272
  - illegitimate child in Chicago, 467
  - importance of blood pressure, 268
  - index medicus, 85
  - indications for operative interference in intracranial tension, 534
  - influence of menstruation on gastric activity, 362
  - instruction of senior students in medicine, 53
  - invulnerability of epileptics, 306
  - iodine-content of the thyroid, 310
  - irrigation method as a means of aborting and treating acute specific urethritis, 372
  - Johns Hopkins Hospital Medical Society, 378
  - leora bacillus in the circulating blood, 178
  - malignancy of joint tuberculosis, 264
  - master of those who know, 80
  - mechanism of posterior presentation, 460
  - mechanism of the retention of chlorides, 174
  - Medical Association of the Greater City of New York, 185, 287, 471, 861
  - medical inspection of schools: a problem in preventive medicine, 97
  - medical mission to Labrador, 325
  - microbe of hydrophobia, 374
  - mimicry of pregnancy by fibroids and ovarian tumors, 169
  - misuse of boric acid, 317
  - more frequent diseases of the joints; their etiology and treatment, with report of cases, 65
  - mortality of operated cases of typhoid perforation, 756
  - necessity for the interruption of pregnancy in phthisical working women, 76
  - negro as a criminal and his influence on the white race, 196
  - new medical building of the Toronto faculty of medicine, 374
  - New York Academy of Medicine, 94, 134, 137, 140
  - New York coroners, 175
  - New York Obstetrical Society, 82
  - New York State Medical Association, New York County branch, 474
  - ophthalmoscope, 230
  - origin of sarcom-melanin, 78
  - passage of albumin through the placenta, 77
  - physiological and therapeutic importance of the suprarenal lands, 185
  - place of the professional school in the modern American university, 273
  - plague in India, 374
  - preparation of benzoyl-acetyl peroxide and its use as an intestinal antiseptic in cholera and dysentery, 364
  - president's address, 234
  - production of albuminuria, 288
  - prognostic and therapeutic importance of arterial pressure, 31
  - proper recognition of electrotherapeutics, 191
  - proposed children's hospital for Montreal, 180

The proposed psychopathic hospital, 465
  prophylaxis of venereal disease, 32
Therapeutic use of suprarenal gland in certain diseases of the skin, the, 1023
  uses of the Roentgen rays, cases illustrating the, 145
  value of bismutose, 174
  value of the X-ray, the, 958
  value of the X-ray in sarcoma, 955
Therapeutics, iron in, 797
Therapy, 955
The real value of the operation, 473
  ripening, natural death and prolongation of life of the eggs of the starfish, 309
  Roentgen ray, 744
  Rotch memorial hospital, 374
  Russische medicinische Rundschau, 85
  side of the street, 371
  significance of cutaneous angiomata, 91
  significance of variations in the internal secretions, 185
  smallpox situation in Ontario, 84
  specific action of normal saline solution in the production of diuresis. The diuretic action of rectal irrigation, 22
  splitting of albumin by bacteria, 78
  subject as yet in its infancy, 186
  submaximal electrical response of nerve, 312
  surgeon's enemy, the skin, 233
  surgery of the biliary passages, 694
  surgical importance of influenza, 356
  surgical treatment of anuria, 126
  surgical treatment of facial paralysis by nerve anastomoses, 188
  symptomatology of tabes: an analysis of 140 cases of locomotor ataxia, 491
  thermometers, cheap, 1144
  thymus and bone salts, 185
  thyroid and neurotic conditions, 185
  title of doctor, 227
  treatment of acute suppuration of the middle ear, 108
  treatment of aneurisms by subcutaneous injections of glycerin, 364
  treatment of chronic Bright's disease by renal, recapsulation: a report of progress, 471
  treatment of chronic suppuration of the middle ear, 115
  treatment of itching, 574
  treatment of rheumatic diseases of iodide of sodium, 91
  treatment of tuberculosis, 345
  treatment of uremia, 287
  tuberculosis campaign in Montreal, 325
  usefulness of consciousness, 220
  vaccination controversy, 317
  viscosity of sputum and its relation to pertussis, 214
  white blood cells during pregnancy, 461
  X-rays for malignant disease, 32
Third case, no result, 474
Thirteenth Congress of Alienists and Neurologists of France and French-speaking countries, 758
Thomas, T. Gaillard, 756, 799
Thompson, Gilman W., the instruction of senior students in medicine, 53
  Harry French, the use of normal salt solution, 788
Thoracic compression as a means of diagnosis, 264
Three cases of tuberculosis treated with Maragliano's serum, 993
  successful operations for perforation in typhoid fever, 756
Thrombi due to agglutinated red cells, 27
Thumb, sarcoma of the, 1093
Thyroid dislocation of hip, 45
  the iodine-content of the, 310
  in melancholia, 185
Tic douloureux, permanent cure of, 1180
Toilets, public, need of in American cities, 1153
Toilette of the peritoneum in appendicitis, the, 953, 954
  of the peritoneum in gunshot wounds of the stomach and intestines, 954
  of the peritoneum in tubercular peritonitis, 954
  of the peritoneum in typhoid operations, 954
To New Orleans conventions, 762
Tonsillitis, rheumatic, in children, 965
Too many medical schools, 897
To prepare physicians for tropical service, 564
Toronto University graduates in California, 944
Topeka, Kansas, possible plague in, 730
Torsion of the spermatic cord, 571
Tousey, Sinclair, an operation for paronychia, or "run-round," 680
Toxemia of pregnancy, 649
Toxicity of methyl-alcohol, 30
  of sublamin, 29
  of the active principle of the suprarenal glands, 366
Tracheoscopy and bronchoscopy, 263
Trachoma, 1182
Traditions of mosquito theories, 1041
Trained Nurses, a preparatory course for, 1139
Transmission of yellow fever, 1041
Transactions of foreign societies—British, 129, 375, 615, 710, 803, 1039, 1225
  of foreign societies—French, 182, 469, 763, 990, 1103
  of foreign societies—German, 90, 227, 568, 663, 852, 1092, 1142
Transference of bovine tuberculosis to man, 315
Transmission of yellow fever, 652
  of bovine tuberculosis by milk, 949
Transplantation of omentum, 978
  of omentum in the operative treatment of intestinal defects; a clinical and experimental contribution, 126
Transportation and the ophthalmic referee, 231
Transverse incision in laparotomies, 353
  myelitis in a new-born infant, 650
Trap-drummers neurosis; a hitherto undescribed occupation disease, 257
Traumatic myositis ossificans, 518
  paralysis of the circumflex, long thoracic and suprascapular nerves, 1048
  peritonitis, 74
  rupture of the spleen, 119
  syringomyelia, 1163
Treatment and prognosis, 288
  and prophylaxis of neoplasms, 857
  of abnormal children in our schools, 706
  of acute dysentery, 997
  of acute gout, the, 773
  of benign operations upon the stomach, 955
  of cicatricial contractures, 938
  of clubfoot, 858
  of chronic nephritis, 141
  of dyspepsia, 056
  of epileptics, 857
  of esophagismus, 857
  of exophthalmic goiter, the, 518
  of exophthalmic goiter with opium, cocaine and tobacco, 795
  of felon, the, 938
  of fracture, 646
  of fractured patella, 353
  of functional disorders, 275
  of fibrinous pneumonia with hetol, 794
  of glycosuria and diabetes mellitus with aspirin, 218
  of hay fever, 1030
  of hemorrhage, 956
  of hookworm disease, 994
  of hour-glass contraction, 956
  of hyposystolia with anasarca, 1030
  of local tuberculosis, 365
  of lupus vulgaris, 55
  of metatarsalgia with electricity, 513
  of migrane, 980
  of morphinism, 1079
  of neurasthenia, 702
  of ophthalmia neonatorum, 858
  of patellar fracture, 695
  of perforations and tears of the gall-bladder, 210
  of placenta previa, 856
  of placenta previa, the, 699
  of pneumonia, 660
  of progressive deafness based on differential diagnosis, 179
  of progressive paralysis and phychoses, 694
  of pruritus with acids internally, 360
  of purulent conjunctivitis, 230
  of rheumatic affections, 992
  of rheumatoid arthritis, 514
  of surgical shock by adrenalin, the, 1049
  of syphilis, the, 769
  of the after-coming head, 462
  of the auto-intoxications due to overaction of the nervous system, 854
  of the peritoneum in spreading and diffuse peritonitis, the, 954
  of traumatic gangrene of the extremities, 978
  of tropical dysentery with sulphur, 694
  of tuberculous cutaneous ulcers with balsam of Peru, 119
  of tuberculous cystitis, 363
Treatment of tuberculosis in children by meat juice and raw meat, 858
  of typhoid fever, the, 401
  of typhoid with acetozone, 794
  of uncinariasis, 994
  of uremia and clinical conditions, 473
  of vascular tumors by the injection of boiling water, 907
Trembling, the etiology of, 1172
Trenwith, W. D., the treatment of syphilis, 769
Triangle, the subclavian, 1136
Trichloracetic acid, on the local action of, 172
Trips from New Orleans, 758
Triumphal tour of Adolf Lorenz, the, 369
Tropical dysentery, treatment of with sulphur, 694
  worm disease in Germany, 986
True auto-intoxication, 141
Trunecek's serum, 702
Trustees of public medical institutions, duties and responsibilities of, 913
Tubercle bacilli, improved method of discovering, in the urine, 796
Tuberculin as a means of diagnosis, 215
Tuberculosis and hydrotherapy, 855
  and smallpox in Maryland, 987
  commission will send out inquiries, 127
  crusade in New Haven, 1091
  human and bovine, 644
  in Baltimore, 849
  in Hawaii, 1189
  in the negro, 1045
  in the turtle, 508
  meningitis, aphasia or dysphasia in, 262
  of bladder, 716
  of peribronchial glands simulating aneurism, 1100
  of the bladder, suprapubic drainage in, 602
  of the ear, primary, followed by mastoiditis, 501
  of the larynx and aspiration tuberculosis of the lungs following dermatitis blastomycetes, 1027
  of the mammary gland, 1000
  of the tonsils, 949
  primary, of the breast, 1130
  pulmonary, 552
  pulmonary, body-weight in, 1079
  pulmonary, chronic parenchymatous, 774
  pulmonary, four months' experience with antistreptococcic serum in, 1108
  pulmonary syphilis simulating, 211
  silver nitrate injections in, 694
  the treatment of, 345
Tuberculous, cutaneous ulcers, treatment of, with balsam of Peru, 119
  cystitis, 360
  epididymitis of special interest as regards treatment, 571
  laryngitis, 796
  pericarditis, 189
  peritonitis, 357, 652, 1045
Tubes and ovaries, conservative surgery of the, 700
Tulane Hospital bequest upheld, 986
Tumor formation, 854
  small, immense hemorrhage, 718
Tumors and cysts of the pancreas, 947
  of the testis, 573
  primary retroperitoneal solid, 697
Tuning-fork and stethoscope in the diagnosis of fractures, the, 520
Two cases of cervical rib, 807
  cases of myositis ossificans, 518
  cases of so-called Landry's paralysis; autopsies, 307
  successful cases of rectopexy, 378
Typhoid and paratyphoid infections, on the resemblances of malignant endocarditis to, 877
  at Leland Stanford, Jr., University, 1091
  at Palo Alto, 1223
  attains epidemic proportions, 271
  atypical in children, 713
  bacilli, the corset and gall-stones, 239
  epidemic in Ithaca, 271
  fever and fasting, 903
  fever, differential leucocyte count in the early days of, 1148
  fever in infants, 703
  fever, inoculation for, 264
  fever not special to cities, 1040
  fever, peritonitis in, 1079
  fever serum experiment, a, 326
  fever simulants in infants, 713
  fever, treatment of, the, 401
  fever, value of diazo-reaction in, 1081
  gangrene, 262
  in Ithaca, 520

Typhoid leucocytes in, 215
  spine, 139, 1151
  statistics in Montreal, 712
  still epidemic, 517, 1036
  symptoms in young children, 711
  ulcer, perforating, 601

ULCERATIVE endocarditis of long duration, 466
Ulcerative inflammation of the gall-bladder in typhoid fever ending in perforation, 71
Ulcer of the leg, injections of calomel for, 603
  diagnosis of perforated gastric, 1212
  of the stomach, olive-oil for, 69
Umbilical hernia, 907
Uncertainty in matters pancreatic, 948
  of vesical papillomata, 621
Uncinaria and drinking water, 995
Uncinariasis, 123
  in man, 379
  in Southern cities, 805
  in the United States, 994
  the geographic distribution of, in the United States, 680
Undesirable immigrants, 180
Unilateral disease of the kidney simulating stone, 1213
Union of Trinity Medical College and Trinity University complete, the, 1090
United States, medical education in the, 865
University of Pennsylvania, 322
  alumni, meeting of, 1220
Unresolved pneumonia, 1050
Unusual operation performed by Dr. Keen, 518
Uremic convulsions, 473
Ureteral calculus, 224
Ureterocystotomy, 1055
Uretero-ureteral anastomosis, 648
Ureterovesical anastomosis, 361
Ureters, 209
  catheterism of the, 359
Urethral caruncle, 462
  work, adrenalin in, 359
Urethritis, non-specific, lavage under pressure of the urethra in, 26
  and prostatitis, posterior, 1181
Urgent needs of the children's hospital, 800
Uric acid diathesis overdone, 1045
Urinary neuropathy, 25
Urine, abnormal constituents of the, after epileptic seizures, 702
  hyperacidity of the, 633
  incontinence of, 558
  segregation, 354
  sodium chloride and the constituents of the, 309
Urobilin, 651
Usefulness of intestinal disinfectants, 142
Useful prophylactic slip, a, 517
Use of compressed air to enhance the action of remedies, the, 794
  of electrothermic angiotribe in cases of varicocele, the, 564
  of itrol and cuprocitrol, 365
  of normal salt solution, the, 788
  of the combined mixed toxins and X-ray, 955
  of the Widal test requested, 466
Uses and limitations of hypnotic suggestion, 613
Uterine and gastric diseases, the relation between, 699
  cancer, surgical treatment of, 76
  cancer, the treatment of, 1088
  fibromata, the treatment of, 1177
Uterovaginal tamponade, its obstetrical uses, 1177
Uterus, fundal fibroid polyp and inversion of the, 698
  rupture of the, report of a case of, 1207

VACCINATION and parochial schools, 706
  campaign to be repeated, 35
  in Alsace-Lorraine, 1091
Vaccination in early childhood, 559
  in Montreal, 325
  in New Brunswick, 180
Vaccine and Vaccination, 231
Vaginal, Cesarean section, 363
  incision, the scope of the, 1216
  section in suppurative disease of the pelvic structures; indications and technic, 92
  section, scope of the, 407, 586, 588
Value of agglutination, 854
  of cancroin, 365
  of diazo-reaction in typhoid fever, 1081
  of drugs in the glycosuria of diabetes, the, 1079
  of mercurial and phenol preparations as disinfectants, the, 842
  of phenolphthalein in culture media, 28
  of phloridzin test for estimating the functional capacity of the kidneys, 216
  of the incubation period in the diagnosis of the contagious diseases of childhood, the, 1094
  of saline infusions, the, 1078
  of the Schleich narcosis, 507
  of the X-ray in superficial epitheliomata and tuberculosis, 958
  of valvotomy, the, 862
Variations in the internal secretions, the significance of. 625
Varicocele, a new operation for, 791
Varicose ulcer, new treatment of, 73
  veins, 75
Varieties of blood poisoning, 475
  of pathological conditions caused, 717
Variola, preliminary communication on the etiology of, 987
Varix of the inferior mesenteric vein complicated by chronic ulcerative colitis, 999
Vascular neoplasms treated by the injection of hot water, 118
Vaseline and oil for injections, 508
Vaughan, George Tully, intussusception: report of a case reduced by operation, 887
Vegetative endocarditis, a fatal case of polyarthritis complicated by choreiform symptoms and, 253
Venene and anti-venene, 223
Ventral hernia, prevention of postoperative, 695
Ventrofixation, 648
Veratrum viride as an antitoxic, 59
Vermifuge, metallic tin as a, 602
Venous hum, preliminary report on the, in relation to the state of the blood, the, 540
Vertigo, malarial, 645
Very early diagnosis of the acute articular rheumatism, 72
  small bacteria and their passage through filters, 28
Vesical papilloma, 718
  papilloma, removal of, 460
Veto of bill establishing homeopathic wards in Philadelphia Hospital, 1186
Vice of cheap thermometers, the, 413
Victoria, B. C., isolation hospital, 708
Vineberg, Hiram N., the scope of vaginal section, 588
Virulence of symptoms, 230
Virulent pneumococci, a convenient method for growing and storing, 1147
Visiting nurses antituberculosis crusade, 179
Vitality of the fetus, influence of maternal nervous lesions on the, 701
Voluntary motion, 857
Vomiting with acetonemia, 601

WALKER, W. K., a brief consideration of the mechanism of mental states encountered in alcoholic insanity, with illustrative cases, 580
Walrus fin, 382
Walsh, James J., the etiology of colds, 481
Washing of the stomach, 265
Waters of Dax, the, 855
Weight wave of menstruation, the, 1089
Weil's disease, a case of bacteriuria resembling, 1069
Weir, Robert F., New York Academy of Medicine, valedictory address, 337
Western University at London, Ont., the wants a hygienic institute, 419
West Virginia State Medical Association, the, 801
What advice should be given to a woman suffering from fibroid tumor of the uterus? 247
  shall be the treatment in cases of pregnancy complicated by fibroid tumor? 1006
  the Edebohls' operation appears to accomplish, 473
When shall one operate in abdominal contusion, 83
  to operate, 715
White race, the negro as a criminal and his influence on the, 196
Wholesale immunization against the plague in India, 227
  murder by "herb doctor" suspected, 563
Whooping cough, false, 1082
Why choloroform should be used in puerperal eclampsia, 24
  smallpox prevails, 372
Williams, Edward H., the need of public toilets in American cities, 1153
  Howard J., fracture of the spine: three cases, 961
Will the cigarette be banished from Canada, 708
Winnipeg hospitals, 895
Woman's brain, 661
  medical college, 942, 1036
Women physicians are successful, 518
  physicians in Russia, 708
Women's diseases in the Middle Ages, 41
Woodbury, Frank, report of a case of one-sided dislocation of the mandible. Reduced by a novel manipulation, 689
Wood, Francis Carter, the prognostic value of the diazo-reaction in pulmonary tuberculosis, 631
Woodward, J H., empyema of the accessory sinuses of the nose, 347
Work of a throat hospital, 755
Wouldn't be vaccinated, dies, 803
Wound, blank cartridge, infected with tetanus. Excision. Recovery, 696
  suppurating abdominal, the, 1128
Wounds of the heart, 118
Wyman, Walter, opening address delivered at the first annual conference of State and National health authorities, under the act of July 1, 1902, at Washington, D. C., June 3, 1903, 1189

X-RAY and Finsen light in the treatment of lupus, the, 1181
  in epithelioma, 189
  treatment of pseudoleucemia, 1131
  work, screen for, 514
X-rays at the Massachusetts General Hospital, the, 807
  bactericidal action of the, 316
  in cancer and lupus, 120
  in cancer of the cervix, 281
  the, 895

YELLOW atrophy of liver, acute, 1181
  fever, disappearance from Havana, Cuba, 1
  fever germ, probable nature and life-cycle of the, 1134
  fever in Mexico, 1141
  fever mosquitoes and ocean vessels, 709
  fever, the Shiga bacillus and secondary infections in, 1133
  journalism and Bellevue, 370
Yohimbin, the anesthetic action of, 1174

ZOSTER, herpes, 26

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